DOCUMENT RESUME

ED 295 547 HE 021 485

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|---|---|
| TITLE | Financing Policies for High Cost University of Minnesota Health Professions Programs. |
| INSTITUTION | Minnesota Higher Education Coordinating Board, St. Paul. |
| PUB DATE | 8 Feb 88 |
| NOTE | 111p. |
| AVAILABLE FROM | Minnesota Higher Education Coordinating Board, Suite 400, Capitol Square Building, 550 Cedar Street, St. Paul, MN 55101. |
| PUB TYPE | Reports - Descriptive (141) |
| EDRS PRICE | MF01/PC05 Plus Postage. |
| DESCRIPTORS | Administrative Policy; Allied Health Occupations; *Dentistry; Financial Policy; Higher Education; Loan Repayment; Medical Education; *Medicine; Pharmaceutical Education; *Pharmacy; Professional Education; Program Costs; Scholarships; State Aid; Student Attrition; *Student Financial Aid; Student Loan Programs; *Tuition Grants; Veterinary Medical Education; *Veterinary Medicine |
| IDENTIFIERS | *Minnesota |

ABSTRACT

Issues and related data are examined concerning financial aid to students in the health professions at the University of Minnesota, with a focus on targeted grant programs for dentistry, pharmacy, veterinary medicine, and medicine. Following a discussion of policy implications in general and an overview of each of the fields involved, eight policy alternatives are explored: continue to modify cost-related tuition within the University; allow tuition to increase to 33% of the cost of instruction; allocate or solicit more private university funds to attract quality students; allocate or solicit more private university funds to help financially needy students; provide additional program funding in the form of a tuition offset or other means; provide scholarship funds to be used by the university to attract qualified students; provide grant funds to help financially needy students; and modify the Graduated Repayment Income Protection Program to reduce the repayment burden on students with exceptionally high loans or low income. Eight tables illustrate tuition, cost, and student attrition data. (KM)

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# FINANCING POLICIES FOR HIGH COST UNIVERSITY OF MINNESOTA HEALTH PROFESSIONS PROGRAMS

Prepared by the Staff of the
Minnesota Higher Education Coordinating Board

February 8, 1988

## EXECUTIVE SUMMARY

In April 1987, the Higher Education Coordinating Board directed staff "to immediately begin working with the University of Minnesota to explore more creative ways to assist students in the health professions in financing their education and that such exploration focus on targeted grant programs." An examination of the issues and related data needed to respond to the Board's directive are contained in this report.

### ISSUES

The state's funding policy for public collegiate education assumes that 33 percent of a system's instructional cost will be covered by tuition receipts. The University of Minnesota Board of Regents' policy is to move toward tuition rates that will cover 33 percent of instructional cost within a program or group of similar programs.

For many years, tuition in certain high cost health professions programs has paid for less than one third of the costs of these programs. Students in other programs, especially undergraduates, have paid more than one third of their costs. The University wishes to reduce these cost shifts. If tuition in the certain health professions programs increases to 33 percent of the cost of instruction, the University believes that it will not be able to compete with other universities for the most qualified students. An additional concern is that higher tuition would require many students to accept loans that require an unreasonable repayment at typical incomes for graduates.

The University proposes that a separate category of six unique and high cost health professions programs be created for funding purposes. The legislature is being asked to fund 75 percent of the cost of instruction for

these programs. This proposal is called the "tuition offset" approach. It would allow tuition to remain at 25 percent of the cost of instruction, the current proportion across the group of six programs.

## FINDINGS

The report focuses on dentistry, pharmacy, and veterinary medicine because these programs were identified in previous work as being particularly harmed if cost-related tuition rates are adopted. Information on medicine was included at the University's request. Each profession has its own profile, but there are similarities in the conditions they face.

### Findings Regarding Quality Issues

Supply and demand for graduates in these fields are relatively in balance or in surplus. The University's expressed need for special funding is therefore not based on the desire to induce more students to enter these fields. There is evidence, however, that the professions are becoming less attractive to prospective students because of changing practice conditions. The number of applications nationally has been falling, forcing programs to cut class size or become less selective. Competition between universities for the most highly qualified students is intensifying.

Although the relationship between measured ability and later professional achievement is not precise, the University wants the largest possible, most highly able, applicant pool from which to admit. In dentistry, the decline in the numbers of applicants nationally and in Minnesota has been accompanied by a drop in the measured academic quality of entering classes. The other fields are struggling to maintain the quality of entering students within a smaller applicant pool.

The University of Minnesota's current resident tuition rates are among the highest for public universities. From about one third to one half of the admitted applicants who turn down the University's offers of admission say that non-competitive tuition and fees were partially responsible for their decisions.

The effects on the applicant pool if tuition is increased to 33 percent of the cost of instruction are speculative. Students clearly evaluate on multiple factors, and some expensive programs can continue to be highly selective based on their quality and prestige.

**Findings Regarding Access Issues**

At current tuition rates, most health professions students borrow heavily, and their debts have been increasing. Some students already borrow amounts that will require repayment of more than 10 percent of the average professional income during the early years of practice. This situation is most pronounced in veterinary medicine and dentistry and least evident in pharmacy.

The Graduated Repayment Income Protection (GRIP) program can contain debt repayment within 10 percent of average annual income for most of today's students. If tuition is raised to 33 percent of the cost of instruction, however, a majority of veterinary medicine students and about a fourth of the dental students might incur loans that could not be repaid under GRIP within the standard repayment schedule.

**OPTIONS**

The general state funding policy is to provide unrestricted funds to the governing boards and expect them to manage program expenditures and tuition rates to achieve state and institutional goals. Any form of special treatment

is subject to later similar requests by other programs, including programs in other public institutions.

Before any policy is adopted, its purpose should be clearly established. The following questions illuminate some of the objectives that might be served by creating special provisions for the financing of students in high cost health professions programs that are experiencing problems:

- Is special funding an appropriate and effective state response to counteract diminishing interest in health professions careers?
- If the University needs to maintain professional school tuition rates that are competitive with its peers, should all taxpayers, not just other students at the University, share in the additional cost?
- Does the state have an obligation to insure that any student, regardless of financial circumstances, can attend health professions programs without incurring an "unreasonable" loan burden?

Eight policy alternatives have been explored. Four alternatives expect the University of Minnesota to allocate funds to health professions programs within its general appropriation for instruction:

- Continue to modify cost-related tuition within the University.
- Allow tuition to increase to 33 percent of the cost of instruction.
- Allocate or solicit more private University funds to attract qualified students.
- Allocate or solicit more private University funds to help financially needy students.

Four alternatives would require the state to provide additional funding:

- Provide additional program funding in the form of a tuition offset or other means.
- Provide scholarship funds to be used by the University to attract qualified students.
- Provide grant funds to help financially needy students.
- Modify the GRIP program to reduce the repayment burden on students with exceptionally high loans or low income.

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## CHAPTER I. INTRODUCTION

Professional programs in the health sciences are among the most costly for a university to offer. At the University of Minnesota, students in certain professional health science programs pay higher tuitions than most other students, but these tuition levels cover a smaller proportion of instructional cost than tuitions in other programs. This report examines the issues and options surrounding future funding of health professions programs that are the unique responsibility of the University of Minnesota.

### HIGH COST HEALTH PROFESSIONS PROGRAMS: MINNESOTA ISSUES

State and University policies promote student charges that reflect the costs of instruction in different programs. If tuition rates are adjusted to an equal proportion of instructional cost, tuition will increase dramatically in certain health science professional programs. Tuition increases could lead to three types of problems that merit policy discussion before they are allowed to take place.

First, changes in the attractiveness of the health professions appear to be discouraging talented people needed to maintain the quality of health care from entering certain professional programs. A policy issue is whether shifts in occupational choice should be regarded as the natural workings of the labor market or whether modifications in the state's post-secondary financing policies should be made to encourage high ability students to choose careers in the health professions.

Second, the University of Minnesota may be unable to compete financially for its share of health professions applicants, particularly those of high ability who are sought by other universities. A policy issue is whether the

University should receive special funding to remain competitive in these fields or should be expected to make internal allocation decisions within overall funding levels when it faces price competition.

Third, low and moderate income students no longer may be able to afford the education needed to enter the health professions. A policy issue is the extent to which the state has an unmet obligation to make the health professions financially accessible to Minnesota and out-of-state residents attending the University of Minnesota.

Analysis by Higher Education Coordinating Board staff had indicated that programs in veterinary medicine, dentistry, and pharmacy may be particularly harmed if cost-related tuition rates are adopted. This study therefore uses these programs as case studies of trends and conditions that could face other high cost graduate and professional programs.

## STUDY OBJECTIVES

The purpose of this study is to provide a basis for policy decisions on how Minnesota could provide financial access to professional programs in dentistry, pharmacy, and veterinary medicine. It was assumed that such decisions should be consistent with state goals for graduate and professional education, statutory funding policies, student needs, and labor market conditions. The study has the following principal objectives:

- To measure the need for targeted state financing of students in University of Minnesota professional programs of dentistry, veterinary medicine, and pharmacy
- To identify and analyze alternative methods of financing students in these programs.

A secondary objective of the study is to examine principles and issues emerging from the analysis and conclusions regarding dentistry, veterinary medicine, and pharmacy that might have implications for financing students in

other graduate and professional programs at the University of Minnesota and elsewhere.

## BACKGROUND AND MANDATE

The Higher Education Coordinating Board agreed to pursue this study on April 16, 1987, after reviewing a staff report on the financing of graduate and professional education in Minnesota.[1] Part of the discussion resulting from the report dealt with a University of Minnesota proposal for a special subsidy to limit tuition increases in several health professions programs.

Under the state's post-secondary education financing policy, the University and other public collegiate institutions are funded at 67 percent of the aggregate cost of instruction. Tuition revenues are expected to generate the remaining 33 percent. The University's internal tuition policy is to move toward charging students 33 percent of the cost of instruction on a program by program basis. The University has proposed that special funding be provided so that tuition in six high cost and unique health science programs can be maintained at approximately 25 percent of instructional cost.

Further analysis by Coordinating Board staff indicated that, if tuition in all programs were charged at 33 percent of the cost of instruction, students in dentistry, pharmacy, and veterinary medicine might experience unmanageable debt obligations in comparison to their expected incomes. These programs also were singled out because they are not offered at other Minnesota institutions and, at 33 percent of instructional cost, tuition rates would not be competitive with peer universities in other states. The University contended that the availability of a new state income contingent loan repayment plan would not help the University compete for students against peer institutions with lower tuition charges.

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[1] Minnesota Higher Education Coordinating Board, The Financing of Graduate and Professional Education in Minnesota (January, 1987).

The Coordinating Board did not endorse the tuition offset request. It did, however, direct staff "to immediately begin working with the University of Minnesota to explore more creative ways to assist students in the health professions in financing their education and that such exploration focus on targeted grant programs as well as the [income contingent] loan program."

**GENERAL CONTEXT**

While the federal government and states have attempted to maintain broad access to undergraduate education through student aid programs, they have not used the same approach to financing graduate and professional education. Graduate and professional aid programs are likely to be seen as incentives to students to enter certain fields, especially disciplines and professions experiencing shortages. Universities also have offered fellowships and other assistance to recruit talented students. Minnesota has followed this tradition by supporting special programs to address labor market conditions in the health professions and, more recently, to increase the ability of the University of Minnesota to improve its standing as a nationally-ranked institution.

In recent years, grant and fellowship support for graduate and professional students has not kept pace with educational costs. As a result, many graduate and, especially, professional students are incurring debts that are high compared with past experience. At the graduate level, loans grew from an estimated 16 percent of available financial aid to 48 percent between 1974 and 1984.[2]

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[2] Arthur M. Hauptman, Students in Graduate and Professional Education: What We Know and Need to Know (Association of American Universities, 1986).

**CONTENTS OF REPORT**

The next two chapters in this report give background on existing financing policies and the issues and assumptions that focused the study. Individual chapters on dentistry, pharmacy, and veterinary medicine examine the trends and conditions in each of these professions. Chapter VII introduces parallels between these professions and medicine. The final chapter analyzes policy options open to the University and the state.

## CHAPTER II. EXISTING FINANCING POLICIES

The University of Minnesota contends that the state's general financing policies for post-secondary education may damage the institution and its students unless changes are made for high cost health professions programs. This chapter reviews current state and University policies regarding the financing of instructional costs and student aid for health professions students.

### COST-RELATED TUITION POLICIES

In the early 1970s, the University of Minnesota began exploring policies that relate student tuition in different programs more closely to instructional costs. The Board of Regents adopted a policy of cost-related tuition in December 1979 but moved cautiously in implementing it.

In 1983, the University's progress in establishing cost-related tuition accelerated when the state adopted a policy of funding each public collegiate system on the assumption that tuition revenues would cover one third of the system cost of instruction. The University has, however, continued to modify cost-related tuition in response to educational objectives, market conditions, administrative experience, and other factors.

As shown in Table 1, yearly tuition for full-time resident students at the University ranges from $1,757.70 to $6,300.21, depending on level and program. Students in professional programs tend to pay the highest tuition rates. Dentistry, medicine, veterinary medicine, Master of Business Administration, and law programs are especially costly to students.

TABLE 1. UNIVERSITY OF MINNESOTA ACADEMIC YEAR TUITION FOR FULL-TIME STUDENTS, SELECTED PROGRAMS, 1987-88

| Lower Division Undergraduates | RESIDENT | NON-RESIDENT |
|---|---|---|
| All students | $1,757.70 | $4,394.46 |
| **Upper Division Undergraduates** | | |
| Medical Technology Program | 2,722.44 | 6,806.10 |
| Nursing | 2,722.44 | 5,444.88 |
| Occupational and Physical Therapy | 2,722.44 | 6,806.10 |
| College of Forestry | 2,696.40 | 6,741.00 |
| Department of Mortuary Science | 2,559.48 | 6,398.70 |
| College of Agriculture | 2,520.84 | 6,302.10 |
| College of Home Economics | 2,420.88 | 6,052.20 |
| College of Biological Sciences | 2,415.84 | 6,039.60 |
| Dental Hygiene | 2,387.70 | 5,969.46 |
| College of Education | 2,303.28 | 5,758.20 |
| Institute of Technology | 2,257.08 | 5,642.70 |
| School of Management | 2,164.68 | 5,411.70 |
| UMD-Fine Arts | 2,135.28 | 5,338.20 |
| Morris Campus (all programs) | 2,086.56 | 5,216.40 |
| UMD-Liberal Arts | 2,068.08 | 4,648.56 |
| UMD-Science and Engineering | 2,066.82 | 5,167.26 |
| UMD-Business and Economics | 1,940.40 | 4,851.00 |
| UMD-Education and Human Service Professions | 1,910.58 | 4,776.66 |
| College of Liberal Arts | 1,859.34 | 5,170.20 |
| University College | 1,859.34 | 4,648.56 |
| General College | 1,774.92 | 4,437.30 |
| **Graduate and Professional Students** | | |
| **Medical School** | 6,300.21 | 12,600.42 |
| MBA Program (day) | 5,522.40 | 8,940.60 |
| **School of Dentistry** | **5,431.11** | **8,146.68** |
| **College of Veterinary Medicine** | **4,840.68** | **7,261.02** |
| Law School | 3,163.04 | 6,326.08 |
| **College of Pharmacy-Pharm.D. Program** | 2,749.74 | 5,499.48 |
| **College of Pharmacy-B.S. Program** | 2,572.92 | 5,145.84 |
| Graduate School | 2,524.95 | 5,049.90 |
| School of Public Health | 2,436.84 | 4,873.68 |

NOTE: Does not include required fees. Assumes credit load of 14-18 credits a quarter for three quarters for all undergraduate programs, pharmacy and public health. Assumes 45 credits a year for the MBA program and the Graduate School. Assumes 12 or more credits a quarter in dentistry, veterinary medicine, and law. Assumes 16 or more credits a quarter in medicine.

SOURCE: University of Minnesota

Undergraduate rates for non-residents, with the exception of nursing, are 2.5 times the resident rate. For programs in the Graduate School, pharmacy, public health, law, nursing, and medicine, non-resident rates are twice the resident rate. Non-resident tuition charges in dentistry and veterinary medicine are 1.5 times resident tuition because the Regents determined that higher rates would be uncompetitive with peer universities that are recruiting the same students.

Although students in health science professional programs pay relatively high tuition rates, these rates do not cover one third of the instructional costs in dentistry, veterinary medicine, and pharmacy. To generate total revenues equal to 33 percent of the cost of instruction, the University must charge other students more than one third of the costs of their programs.

Table 2 demonstrates how tuition rates in different University programs have changed as a percent of instructional cost since 1982-83. In every year except 1985-86, the University has based tuition rate increases partially on the intent to narrow the differences in instructional cost paid by students in different programs. Since 1982-83, tuition increases in units that charged less than 33 percent of the cost of instruction have averaged 56 percent while in other units the average increase has been 41 percent.

Progress, however, has been affected by other policy decisions. First, in most years no tuition rate was allowed to increase beyond a given percentage. Increases in 1987-88, for example, were limited to no more than eight percent. Second, certain professional programs--including dentistry, veterinary medicine, and pharmacy--were capped until 1987-88 so that the programs would not rank higher than third in tuition among their peers.

TABLE 2. UNIVERSITY OF MINNESOTA TUITION RATES AS A PERCENT OF INSTRUCTIONAL COST, SELECTED YEARS 1982-83 TO 1987-88

| REGISTRATION UNIT | TUITION AS A PERCENT OF INSTRUCTIONAL COST 1982-83 | 1984-85 | 1985-86 | 1987-88 | TUITION INCREASE 1982-83 TO 1987-88 |
|---|---|---|---|---|---|
| Twin Cities-Lower Division | 48.4 | 41.3 | 40.9 | 44.1 | 36.1 |
| School of Management | 50.1 | 51.4 | 47.1 | 41.3 | 51.6 |
| College of Liberal Arts | 39.3 | 36.7 | 35.0 | 40.8 | 42.8 |
| Institute of Technology | 45.1 | | 36.0 | 40.3 | 50.3 |
| Dept. of Mortuary Science | 35.0 | 35.7 | 26.9 | 38.5 | 36.9 |
| Morris-Upper Division | 30.7 | 34.1 | 31.7 | 38.0 | 57.7 |
| General College | 46.4 | 44.0 | 42.6 | 38.0 | 36.3 |
| Duluth-Lower Division | 48.4 | 41.3 | 42.0 | 37.5 | 36.1 |
| Graduate School-Twin Cities | 25.0 | 28.4 | 27.5 | 36.7 | 5.9 |
| Duluth-Educ and Human Ser | 34.5 | 42.6 | 51.4 | 35.7 | 28.8 |
| Morris-Lower Division | 48.4 | 41.3 | 34.2 | 35.6 | 57.7 |
| Duluth-Fine Arts | 30.9 | 38.3 | 30.6 | 35.3 | 48.4 |
| College of Education | 29.4 | 34.8 | 36.8 | 34.9 | 54.5 |
| College of Home Economics | 29.6 | 35.2 | 34.0 | 34.8 | 65.9 |
| Graduate School-Duluth | 21.5 | 21.7 | 20.1 | 34.6 | 5.9 |
| School of Public Health | 40.9 | 33.1 (1) | 36.5 | 34.5 | 37.3 |
| Duluth-Business and Economics | 35.5 | 35.7 | 32.4 | 32.8 | 42.2 |
| **Medical School-Twin Cities** | **23.7** | **32.6** (1) | **30.9** | **31.4** | 83.1 |
| Law School | 17.2 | 35.7 | 35.8 | 31.0 | 66.1 |
| College of Biological Science | 33.6 | 33.9 | 30.2 | 30.6 | 56.5 |
| Duluth-Science and Engring | N/A | N/A | 30.4 | 30.3 | N/A |
| Duluth-Liberal Arts | 34.2 | 36.6 | 30.4 | 30.2 | 50.4 |
| Crookston | 26.8 | 29.4 (1) | 26.8 | 28.7 | 49.5 |
| **Medical School-Duluth** | **23.1** | **25.2** (1) | **25.4** | **24.7** | 83.1 |
| Waseca | 25.8 | 27.8 (1) | 26.3 | 24.2 | 43.1 |
| Occupational/Physical Therapy | 22.2 | 33.1 (1) | 23.9 | 23.6 (2) | 55.3 |
| College of Agriculture | 25.3 | 29.0 | 24.9 | 23.3 (2) | 75.2 |
| College of Forestry | 29.2 | 29.9 | 23.5 | 22.9 (2) | 77.1 |
| **College of Pharmacy-B.S.** | **32.2** | **20.7** (1) | **23.6** | **21.7** (2) | 36.1 |
| Medical Technology | 23.0 | 13.3 (1) | 22.3 | 21.3 (2) | 60.0 |
| **School of Dentistry** | **21.2** | **22.3** (1) | **19.7** | 20.8 (2) | 58.1 |
| Nursing | 20.8 | 19.0 (1) | 19.6 | 18.3 (2) | 68.4 |
| Dental Hygiene | 17.9 | 15.4 | 13.6 | 18.3 (2) | 83.4 |
| **College of Veterinary Med** | **17.6** | **16.9** (1) | **15.9** | **15.1** (2) | 44.7 |
| **College of Pharmacy-Pharm.D.** | **32.2** | **20.7** (1) | **23.6** | **14.8** (2) | 45.5 |

CONTINUED

TABLE 2. UNIVERSITY OF MINNESOTA TUITION RATES AS A PERCENT OF INSTRUCTIONAL COST, SELECTED YEARS 1982-83 TO 1987-88, CONTINUED

(1) In 1984-85, tuition increases in these programs were "capped" so that they would not be raised beyond the third rank among competing programs in comparable public universities.

(2) In 1987-88, tuition increases in these programs were held down by a maximum increase of 8 percent.

SOURCES: University of Minnesota and David J. Berg and Stephen A. Hoenack, "The Concept of Cost-Related Tuition and Its Implementation at the University of Minnesota," Journal of Higher Education, vol. 58 (May-June 1987), pp. 276-305.

Nevertheless, the University successfully has reduced the percentage cost of instruction paid by lower division students and undergraduates in some of the programs that historically have charged the highest percentages. These students, however, continue to be charged more than one third of their costs.

In 1987, the University requested $3.6 million for each year of the biennium from the Minnesota Legislature as a "tuition offset" for students in dentistry, medicine, pharmacy, public health, and veterinary medicine "in order to maintain tuition at a reasonable level without passing a portion of the costs to other University students."[3] The offset would have allowed the University to maintain tuition rates in these programs at about 25 percent of the cost of instruction without asking students in other programs to pay more than 33 percent of their instructional cost. The governor did not include this request in his budget, and it was not funded during the 1987 session. The University is renewing its request in the 1988 Legislature.

## GRANTS FOR GRADUATE AND PROFESSIONAL STUDENTS

Although the University has not succeeded in achieving a tuition offset to benefit all students, it has won legislative support for grants to encourage sought-after individual students to enroll. The 1985 Legislature appropriated $2.5 million to the University for fellowships to recruit and retain high ability graduate students in Fiscal Year 1987. The 1987 Legislature expanded this commitment, providing $6.1 million for graduate fellowships in the 1988-89 biennium. The purpose of this appropriation is to further "the University of Minnesota's efforts to focus its mission and improve its programs, particularly in the liberal arts."[4] Health professions students, therefore, are not eligible for these funds.

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[3] State of Minnesota Proposed Biennial Budget 1987-89 for Post-Secondary Education.

[4] Laws of Minnesota for 1987, Chapter 401, Section 6, Subdivision 1 (b).

A second state appropriation of $111,200 for the 1988-89 biennium provides fellowships for minority and disadvantaged students in the undergraduate and graduate health sciences. Like the graduate fellowships, awards are made on the basis of merit and are intended to enable the University to compete for top students. The size of the appropriation and its restricted purpose, however, do not make it a solution to the University's problems in financing professional health science education.

**GRADUATED REPAYMENT INCOME PROTECTION (GRIP) PROGRAM**

Recognizing problems that might be caused by high tuition in certain health professions programs, the 1985 Legislature directed the Coordinating Board to develop and implement an income contingent loan repayment program.[5] The program, Graduated Repayment Income Protection (GRIP), eases the repayment burden in two ways. Payments are lower when the graduate is first becoming established in a career and then increase with the ability to repay. The repayment period also can be stretched as long as 20 years while most student loan programs require repayment within 10 years.

The GRIP program started accepting applications in 1986-87. Students graduating from Minnesota schools of medicine, chiropractic, dentistry, pharmacy, public health, and veterinary medicine are eligible.[6]

GRIP is too new to know whether or not it could be a factor in causing students to select state professional schools. The University of Minnesota, however, does not believe it will be an effective competitive strategy.

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5 Laws of Minnesota for 1985, First Special Session, Chapter 11, Section 3.
6 Laws of Minnesota for 1987, Chapter 401, Section 2, Subdivision 6.

First, no matter how well designed, a loan repayment management program is not as attractive to potential students as low tuition or generous grants offered by competing universities. Second, since GRIP does not become available until the student graduates, it is not likely to be a factor in program selection several years earlier.

## CHAPTER III. QUESTIONS AND ASSUMPTIONS

- Is the University of Minnesota competitive for the most promising students in dentistry, veterinary medicine, and pharmacy?
- Is the University of Minnesota affordable for all students who want to enter programs in dentistry, veterinary medicine, and pharmacy?

These two questions are the basis for the information presented in this report. They imply related but separate problems in the financing of health professions education. The University of Minnesota could be a low cost institution, affordable to all who want to enter, and not be competitive if peer institutions offer even more attractive financing. The University also could be very competitive, but the health professions could be financially out of reach for many students if expenses are high everywhere.

This chapter describes the kinds of information presented later in the report to address the above questions. The concluding sections list study limitations and sources of information.

### POLICY GOALS AND QUESTIONS

States often have multiple goals in providing funding for post-secondary education, and the goals for financing graduate and professional education frequently are different than the goals for financing undergraduate studies. The following state goals are related to the issues explored in this study:

- Meeting important occupational needs
- Maintaining a strong university
- Providing educational access

Each of these goals raises different questions and potentially leads to different policy choices.

**Meeting Important Occupational Needs**

Health professions education has enjoyed public support for many years because graduates have skills that have been, and continue to be, vital to the public welfare. In the 1960s and 1970s, massive amounts of federal funds were appropriated because there were shortages in most of the health professions. The nation embarked on a major effort to encourage and enable more young people to choose health professions occupations.

Shortages may be pervasive or they may be confined to certain communities. While shortages are usually defined in terms of the numbers of people in the labor market, shortages also can be defined in terms of the ability and other desired characteristics of new graduates. In public school education, for example, national concern in recent years has focused on the need to attract academically able and minority teachers to improve the quality of elementary and secondary schools.

**Key Questions**. In assessing the need for public financing of education to meet occupational needs, the primary questions are:

- Will the demand for people with certain skills exceed the anticipated supply?
- Are the characteristics of students attracted to programs consistent with the requirements for successful performance in the occupation?

**Relation to Study**. The health professions continue to be important to the quality of life and the economy in Minnesota. In general, however, the numbers of graduates of health professions programs are expected to meet, and in some cases exceed, the numbers of people needed to maintain the health care system. In fact, the deteriorating labor market in some health professions is believed to be discouraging high ability students from entering these fields.

The University is not trying to expand the capacity of its health professions programs and does not contend that it will be unable to educate

enough dentists, veterinarians, and pharmacists to meet Minnesota needs. Accordingly, this report does not examine the need for graduates in detail, because this is not the argument currently used to justify added state support.

The University of Minnesota proposes that new sources of financing are needed to protect the quality of health care by assuring that talented college graduates choose health care occupations. The report therefore includes available information on trends in the ability of people now entering these professions.

**Maintaining a Strong University**

Nationally-ranked universities build their reputations by enrolling talented students who contribute to faculty research and go on to productive careers. A second purpose of funding graduate and professional students is therefore to attract the best people to a particular institution's programs. In this instance, the competition is with other universities rather than other occupations that these students could choose.

**Key Questions**. Relevant questions to evaluating the need for state support for the purpose of maintaining a strong university include:

- How do the tuition and fee charges compare to charges at competing programs?
- Is the financial aid offered by the university competitive?
- Is there evidence that uncompetitive tuition and financial aid policies are diminishing the quality of applications and acceptance of admissions offers?

**Relation to Study**. The University of Minnesota has requested additional state appropriations to support programs in six health science professions because the tuition rates that would result under cost-related tuition would be uncompetitive with peer institutions. The University fears that imposing

higher tuition in these programs would harm program quality and, ultimately, the quality of health care in Minnesota by reducing its ability to enroll the best students.

Since the effects of existing financing policies on the future quality of the University of Minnesota programs in dentistry, veterinary medicine, and pharmacy are the key issue from the University's point of view, much of this report is directed toward providing information to address this issue.

## Providing Educational Access

Since the 1960s, access to education has been a cornerstone of state and federal financing of undergraduate education. Tuition charges are kept as low as possible, and financial aid based on need is made available so that people can develop their talents through education.

While the states and the federal government have committed themselves to providing access to undergraduates, they do not give this goal the same prominence in financing graduate and professional education. Labor market demands and competition for the best students are the more common goals. Consequently, aid for graduate and professional students usually is designed to attract students to particular professions or institutions rather than to allow full freedom of choice to pursue further education. As society has grown more complex and more affluent, however, there has been a tendency to extend access to higher levels of education.

**Key Questions**. The key questions to evaluating the need for financing to guarantee access to health professions education are:

- Can all qualified students afford to attend?
- If student loans are part of the financing package, are the resulting loan levels manageable after students graduate?

**Relation to Study**. Minnesota has instituted an income contingent loan repayment program to help health professions students repay their educational debt. Still, some students could have difficulty managing repayment if debt levels continue to increase. Proposed tuition increases under implementation of cost-related tuition policies would add to this problem. If educational costs are too high, ability to pay will determine who enters the health professions.

These issues are explored in the report as they relate to dentistry, veterinary medicine, and pharmacy. They have implications for financing graduate and professional students in general.

## LIMITATIONS

The following issues are not significantly addressed in this study because they are outside the scope of the charge from the Coordinating Board.

### Need for Graduates

The report does not focus on the need for adjusting the numbers of graduates to accommodate anticipated demand in the labor market.

### Future of the University of Minnesota School of Dentistry and College of Veterinary Medicine

In June 1987, a University of Minnesota task force recommended closing the School of Dentistry and College of Veterinary Medicine in order to redirect resources to other priorities. In both cases, escalating program costs and evidence of an oversupply in these professions convinced the task force to offer the recommendations. Subsequently, the University Board of Regents voted to reject proposals to close these schools. This report assumes that the University will continue to offer programs in dentistry, veterinary medicine, and pharmacy and does not examine the options of closing them.

**Program Costs**

The analysis in the report is based on existing program costs and does not evaluate whether or not the programs are efficient or could be provided with lower expenditures. This assumption is important because the burden of cost-related tuition would be reduced if the University could restructure the programs to make them less expensive. The School of Dentistry, in fact, has proposed several steps to reduce the per student costs of instruction.

As shown in Table 3, direct costs per full-year equivalent student did not grow as fast in the health sciences as they did in other programs between 1981 and 1985. Cost increases in the School of Dentistry were particularly modest during those five years, but had increased rapidly between 1977 and 1981 following a cut in class size. Costs in veterinary medicine increased faster than averages for the health sciences and for other programs between 1981 and 1985.

**Graduate Education in the Health Professions**

The report examines trends and conditions in the first professional degree programs in dentistry, veterinary medicine, and pharmacy. Advanced study, however, is becoming increasingly common. Approximately 40 percent of all dental graduates, for example, enroll in advanced training after receiving their D.D.S. degrees. Graduate education in the health professions differs in significant ways from undergraduate professional education, and the findings in this report cannot be extended to graduate professional programs.

**SOURCES OF INFORMATION**

The following sources of information provide the findings in the next chapters:

- Published data from the professional associations in dentistry, veterinary medicine, and pharmacy and their educational affiliates.

TABLE 3. CHANGE IN UNIVERSITY OF MINNESOTA DIRECT COSTS OF INSTRUCTION PER FULL-YEAR EQUIVALENT STUDENT, FISCAL YEARS 1981-85

| RANK | UNIVERSITY OF MN UNIT | COST/FYE FY1981 | COST/FYE FY 1985 | CHANGE 1981-85 |
|---|---|---|---|---|
| 1 | UMD-Business and Econ | $1,590 | $2,908 | 82.9% |
| 2 | UMD-Letters and Sciences | 1,540 | 2,781 | 80.6% |
| 3 | Agriculture | 2,949 | 5,323 | 80.5% |
| 4 | Management | 1,910 | 3,297 | 72.6% |
| 5 | Public Health | 2,717 | 4,585 | 68.8% |
| 6 | Crookston | 1,704 | 2,713 | 59.2% |
| 7 | **Veterinary Medicine** | **8,860** | **14,010** | **58.1%** |
| 8 | Nursing | 6,400 | 9,798 | 53.1% |
| 9 | UMD-Education | 1,600 | 2,424 | 51.5% |
| 10 | Institute of Technology | 2,152 | 3,214 | 49.3% |
| 11 | Waseca | 1,757 | 2,615 | 48.9% |
| 12 | Home Economics | 2,776 | 3,880 | 39.8% |
| 13 | General College | 1,365 | 1,908 | 39.8% |
| 14 | **Pharmacy** | **5,837** | **8,014** | **37.3%** |
| 15 | Law | 3,571 | 4,884 | 36.8% |
| 16 | Biological Sciences | 2,494 | 3,395 | 36.1% |
| 17 | **Medicine-Twin Cities** | **4,218** | **5,689** | **34.9%** |
| 18 | Liberal Arts | 1,940 | 2,617 | 34.9% |
| 19 | Forestry | 4,415 | 5,798 | 31.3% |
| 20 | **UMD-Medicine** | **9,752** | **12,638** | **29.6%** |
| 21 | UMD-Fine Arts | 2,063 | 2,667 | 29.3% |
| 22 | Morris | 1,727 | 2,153 | 24.7% |
| 23 | Education | 3,649 | 4,425 | 21.3% |
| 24 | **Dentistry** | **10,822** | **11,851** | **9.5%** |
| 25 | Mortuary Science | 3,780 | 3,697 | - 2.2% |
| | Twin Cities Campus-Non-Health Sciences | 2,304 | 3,312 | 43.8% |
| | Twin Cities Campus-Health Sciences | 5,080 | 6,510 | 28.1% |
| | University of Minnesota System | 2,574 | 3,630 | 41.0% |

SOURCE: University of Minnesota

- Information supplied by the University of Minnesota, including results of student surveys among health science students regarding sources of financing.

- A survey conducted by Coordinating Board staff of applicants to University of Minnesota health science programs who turned down offers of admission in 1987.

## CHAPTER IV. DENTISTRY

The University of Minnesota School of Dentistry, founded in 1888, enrolls 386 undergraduate dental students. Sixty-four percent of its graduates remain in the state to practice. Minnesota ranks third among the states in the percentage of dentists educated within the state. Eighty-eight percent of Minnesota's dentists graduated from the University.[7]

### OVERVIEW OF TRENDS AND CONDITIONS IN DENTISTRY

Dentistry and dental education have been changing in response to dramatic achievements in prevention of dental decay, the use of new materials, increasing emphasis on the dental care needs of older people, and external pressures for cost control.

#### Dentists' Supply and Demand

In recent years, the dental profession has been faced with an oversupply of dentists in most locations and practice specialties. Two factors account for the oversupply: growth in the number of new dentists produced and improvements in dentists' productivity and prevention techniques that have lowered per capita use of dentists.

In 1950, there were 49.8 active civilian dentists per 100,000 civilian population. By 1984, this ratio had grown to 56.3. Minnesota had 68.4 dentists per 100,000 residents, ranking 7th out of 51 states, including the District of Columbia. Between 1980 and 1984, the number of dentists grew by

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[7] Donald W. Johnson, James N. Ake, and Frank M. Hotz, "Dental School of Graduation in Relation to Dentist Location," Journal of Dental Education, vol. 43 (1979), pp. 70-84.

9.5 percent nationally and by 10.4 percent in Minnesota.[8] With the growth in competition among dentists, the estimated annual rate of financial return on dental education fell from 23.6 percent in 1974 to 14.3 percent in 1982.[9]

The latest forecast by the U.S. Department of Health and Human Services projects improving economic conditions for dentists based on the maintenance of a strong national economy and a slowing of productivity and clinical improvements. The number of new graduates also is expected to fall, easing the current oversupply. Demand for dental care is associated closely with general economic conditions, and major changes in the economy could increase or decrease the need for dentists. An aging population also could contribute to a greater demand for dentists. On the other hand, potential clinical developments, such as a vaccine against gum disease, could further dampen dentists' employment.[10]

**Dental Education Programs**

Sixty dental schools in the United States and Puerto Rico are in operation, but three private universities have announced plans to close their schools of dentistry. Of the remaining 57 schools, 35 are public, 11 are private, and 11 are private but state-related.

Although dental schools now are closing, 12 dental schools were founded after 1963 under federal funding provided by the Health Professions Education Act which was designed to correct shortages in health care occupations. This legislation provided $800 million to dental education between 1963 and 1981 when the program ended.

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8 U.S. Department of Health and Human Services, Public Health Service, Report to the President and Congress on the Status of Health Personnel in the United States (March 1986).

9 Harry A. Dunlevy, and Linda C. Niessen, "An Economic Analysis of the Return on Investment for a Dental Education," Journal of Dental Education, vol. 48, (1984), pp. 453-457.

10 U.S. Department of Health and Human Services, Report to the President and Congress on the Status of Health Personnel in the United States.

Nearly all dental programs require four calendar years of study. Thirty-four schools, including the University of Minnesota, require three years of predental education; the others require two years. At the University of Minnesota, 73 percent of the first year students in 1987 had four or more years of predental liberal arts education.

**Enrollments in Dental Education**

Enrollments in dental education expanded rapidly in the 1960s and 1970s, but they have been contracting for the past nine years as demand for dentists became satisfied. Nationally, first year enrollment grew from 4,565 in 1970 to 6,301 in 1978 but has since declined by 28 percent to 4,554 in 1986.[11] The number of applications, however, has fallen faster than enrollments, forcing many schools to become less selective.

The University of Minnesota School of Dentistry has followed the national enrollment trend, increasing entering class size from 120 in 1970 to 150 in the 1970s and then reducing to 100 at the present time. The school's Strategic Planning Committee recommends a further reduction in undergraduate class size to 75.

**Contract Agreements**

Of the 18 states without a dental school, 14 have agreements with dental schools in other states to admit their residents. In addition, nine states with a dental school contract for dental education. As competition for admission to dental school has lessened, the need for states to contract to provide access to dental education has diminished. Consequently, the number of students trained under contract agreements fell by 30 percent between 1980 and 1984.

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[11] Ibid., and American Dental Association, Council on Dental Education, Trend Analysis, Supplement 11 to the Annual Report 85/86 Dental Education (Chicago: ADA, no date).

The University of Minnesota has contracts with Montana for up to four entering students and North Dakota for up to six entering students each year. Total four-year enrollments under these contracts have dropped, however, from 42 in 1978-79 to 26 in 1987-88.

## OVERVIEW OF APPLICATION TRENDS AT THE UNIVERSITY OF MINNESOTA

Like other dental schools, the University of Minnesota has experienced a drop in the number of applications and in the academic qualifications of entering students. These trends are disturbing to the University because they could affect the academic reputation of the School of Dentistry and the quality of dental care in Minnesota.

Nationally, the ratio of applicants to first year places has declined from a high of 2.7 in the mid-1970s to 1.3 today. The academic qualifications of dental students, as measured by preprofessional grades and admissions test scores, began to decline in the early 1980s as admission became less competitive. The greatest decreases tended to occur in private dental schools. Nevertheless, although average academic qualifications of entering U. S. dental students in 1984 were not as high as in recent years, they were higher than those of the 1950s. The 1970s produced an unusually high number of applicants that led to selective admissions practices not typical of earlier years.[12]

Most applicants apply to more than one dental school. The number of applications to dental schools declined by 65 percent between 1975 and 1985. Applications to the University of Minnesota, however, declined by 47 percent. The University ranks 15th out of 35 public dental schools and 18th out of 57

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[12] Gene A. Kramer and David R. DeMarais, "Trends in the Academic Qualifications and Performance of Dental Students," Journal of Dental Education, vol. 50 (1986), pp. 213-220.

U. S. dental schools when they are ranked in order of least to most decrease in applications between 1975 and 1985.[13] (Some of the national rankings given in this chapter are summarized in Table 4.)

Changes in the number of students applying to the University of Minnesota could reflect changes in the attractiveness of careers in dentistry. In particular, the current oversupply of dentists probably is discouraging applications to dental schools across the nation. The financing of dental education also could affect the number and quality of applicants by making the University uncompetitive nationally for the best students or by making dental education unaffordable to qualified applicants. The next sections of this chapter assess these two potential problems.

## IS THE UNIVERSITY OF MINNESOTA COMPETITIVE?

Although national rankings are not formal, the dean of the University of Minnesota School of Dentistry has stated that the school would rank in the top five nationally. Reputation rests on the quality of faculty research and teaching, facilities, and other factors; but the ability of the University to recruit able students is one of the necessary components. Other dental schools also are seeking these students, and the University must be able to compete with them for highly qualified applicants.

### Resident Tuition and Fees

Minnesota resident tuition and fees are high for a public dental school. For the 1987-88 academic year, Minnesota state residents enrolled in the School of Dentistry pay $5,726.76. In 1986-87, the University ranked 7th out of 35 public dental schools in tuition and fees charged to residents per academic year.[14] Universities differ slightly in the lengths of their dental

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[13] ADA, Trend Analysis.

[14] ADA, Annual Report on Dental Education 1986/87 (Chicago: ADA, no date).

TABLE 4. UNIVERSITY OF MINNESOTA SCHOOL OF DENTISTRY RANK AMONG ALL U.S. DENTAL SCHOOLS AND AMONG PUBLIC DENTAL SCHOOLS ON SELECTED CRITERIA

| RANKING CRITERIA | RANK AMONG ALL DENTAL SCHOOLS (TOTAL N = 57) | RANK AMONG PUBLIC DENTAL SCHOOLS (TOTAL N = 35) |
|---|---|---|
| Percent drop in number of applicants 1975-85 (from lowest to highest drop) | 18 | 15 |
| Annual tuition and fees charged to state residents, 1986-87 | 28 | 7 |
| Annual tuition and fees charged to non-residents, 1986-87 | 42 | 21 |
| Percent of all first year students from state, 1986-87 ("market share" from state where located) | 2 | 2 |
| Percent of first year students from out-of-state, 1986-87 | 21 | 9 |
| Academic qualifications of first year students, 1986-87 (Index = Dental Aptitude Test academic average score + Dental Aptitude Test perceptual ability score + Total undergraduate GPA + Undergraduate science GPA) | 16 | 12 |
| Percent of women enrolled, 1986-87 | 26 | 16 |
| Percent of minority students in first year class, 1986-87 | 56 | 35 |

SOURCES: American Dental Association, Council on Dental Education. Annual Report on Dental Education 1986/87. Washington, D.C.: ADA (no date).

American Association of Dental Schools. Admission Requirements of U.S. and Canadian Dental Schools: 1987-88. Washington, D.C.: AADS (1986).

American Dental Association, Council on Dental Education. Trend Analysis, Supplement 11 to the Annual Report 85/86 on Dental Education. Washington, D.C.: ADA (no date).

programs. When total tuition costs for an entire degree program are compared, the University appears to rank 5th out of 35 public institutions.

The highest tuition and fees charged by a U. S. public dental school in 1986-87 were $8,250 at the New Jersey University of Medicine and Dentistry. If University of Minnesota dental students had paid 33 percent of their costs of instruction, they would have been charged $8,298 in 1986-87, making the University the most expensive public dental school in the nation to state residents. Most importantly, at the 33 percent level, the University would charge its resident students more than 18 other dental schools charge non-residents. A Minnesota resident would, therefore, pay less to enroll as a non-resident at many other universities than to stay in the state.

**Non-Resident Tuition and Fees**

Non-resident charges are more competitive than resident tuition and fees; in 1986-87, the University ranked 21st out of 35 public dental schools in non-resident costs.[15] Non-resident dental students now pay $8,442.33 an academic year.

Moreover, few University students pay non-resident tuition. In a survey of 1985-86 dental students, only two percent reported paying non-resident tuition. Eighty-eight percent paid resident tuition, and the remaining students paid tuition based on reciprocity or contract agreements.[16]

The most expensive non-resident charges in the nation, $11,839, were at the University of Michigan in 1986-87. If the University of Minnesota had charged resident students 33 percent of the cost of instruction and continued to set non-resident charges at 1.5 times the resident rate, non-residents would have paid $12,304 that year.

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[15] Ibid.

[16] University of Minnesota, Health Sciences Students' Financial Aid Survey Report 1985-1986.

**Where Minnesota Residents Go to Dental School**

Although the University of Minnesota tuition and fees are high relative to other dental schools, nearly all dental students from Minnesota attend the School of Dentistry. Minnesota ranks fifth among the 50 states in the percent of first-year dental students who remain in their home state. In 1986, 71 Minnesotans entered U. S. dental schools. Sixty-seven, or 94 percent, enrolled at the University of Minnesota. This percentage placed the University second among all dental schools in its ability to enroll residents of its own state.[17]

All four Minnesotans who entered out-of-state dental schools in 1986-87 enrolled in private universities with tuition and fee rates higher than the University of Minnesota. Among the entire 25 Minnesotans in dental schools outside the state, only 4 are attending public universities. Non-resident tuition at these institutions are more than resident rates at the University of Minnesota. At in-state tuition rates, one student would still be paying more than resident tuition at the University of Minnesota.

The high rates of enrollment by Minnesota residents indicate that the University would be unlikely to increase its share by reducing resident tuition. It is possible, however, that Minnesota residents who have the potential to be excellent dentists are declining to enter any dental school because the costs are not consistent with the apparent rewards of a career in dentistry.

**Enrollment by Non-Residents**

Thirty out of 35 public dental schools, including the University of Minnesota, explicitly give admissions preference to state residents.[18] Consequently, public dental schools tend to enroll few non-residents.

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17 ADA, Annual Report on Dental Education 1986/87.

18 American Association of Dental Schools, Admission Requirements of U.S. and Canadian Dental Schools: 1987-88 (Washington, D.C.: AADS, 1986).

Despite its relatively high tuition, the University of Minnesota has been able to enroll a significant number of residents from outside the state. In 1986-87, 36 percent of the first-year dental students at the University were non-residents, ranking the University 9th out of 35 public dental schools in the percent of non-residents enrolled. Private dental schools draw from wider geographic areas, and the University ranks 26th out of 57 public and private U.S. schools. Fifteen of the 38 non-residents enrolling were from the contract states of Montana and North Dakota.[19]

If the ability to compete for students is measured, in part, by the ability to draw upon a national student body, the University of Minnesota appears to be doing well for a public university. If tuition were set at 33 percent of the cost of instruction, this picture could change.

Other state universities are stepping up their recruitment and acceptance of non-residents as the pool of applicants continues to shrink. In 1975, seven percent of the public dental school students were non-resident. By 1985, 18 percent were non-residents--similar to the percentage in 1969 before the competition for admission intensified in the 1970s.[20]

**Reasons for Rejecting Offers of Admission**

The reasons accepted applicants turn down offers of admission to the University of Minnesota indicate how well the University is able to compete with other dental schools. Applicants have given serious consideration to the University and may not represent students who decided not to apply.

Sixty-one applicants to the School of Dentistry in 1987 rejected offers of admission. All were surveyed, and responses were received from 38, or 62 percent. Of these, 34, or 89 percent of the respondents, are attending

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19 ADA, Annual Report on Dental Education 1986/87.

20 Letter to the Editor from H. Barry Waldman, Journal of Dental Education, vol. 50 (1986), pp. 515-516.

another dental school. Consistent with the high ability of the University to retain state residents, only two applicants were from Minnesota. As shown in Table 5, convenience factors were the most common reasons for rejecting the University's offer of admission.

Twelve students, or 35 percent of the respondents, reported that financial reasons entered into their decision to attend another university. Nine students listed high tuition and fees, two listed competing offers of financial aid, and one listed both reasons. All applicants attending schools with lower tuition and fees are attending public institutions in other states. Two of the three applicants with better financial aid offers are also attending public universities. Only one of the 10 students, however, cited financial concerns only, indicating applicants rarely make their decision on the basis of costs alone.

**Academic Qualifications**

The academic qualifications of University of Minnesota dental students have been declining, but they still compare well with dental students nationwide.[21] In 1961, the average grade point average (GPA) of entering dental students at the University of Minnesota was 2.53, and it rose in successive years, reaching 3.34 in 1980. By 1986, however, the undergraduate grade point average of entering students had dropped to 3.06, compared to a national average of 2.99. Minnesota ranked 31st out of 57 dental schools in terms of the GPA of its entering students that year.

The Dental Admission Test (DAT) is required for admission to all U. S. dental schools. In 1961, the average DAT of University of Minnesota dental students was 5.09, and until 1986, average scores had remained above 4.80. In

[21] Information in this section on trends in grade point averages and DAT scores at the University and nationally was provided by the University of Minnesota. The rankings of the University of Minnesota were compiled from information in American Association of Dental Schools, Admission Requirements of U.S. and Canadian Dental Schools.

TABLE 5. REASONS APPLICANTS TO THE UNIVERSITY OF MINNESOTA SCHOOL OF DENTISTRY DECIDED TO ENROLL AT ANOTHER DENTAL SCHOOL (N = 34)

| REASON | NUMBER | PERCENT |
|---|---|---|
| The school that I chose is more convenient for my family and personal life | 26 | 76% |
| The school that I chose offers a program that better suits my specific career interests in dentistry | 11 | 32 |
| The school that I chose charges less in tuition and fees | 10 | 29 |
| Other reasons (geographic preferences, weather) | 8 | 24 |
| The school that I chose has a higher quality program | 7 | 21 |
| The school that I chose gave me a better offer of financial aid | 3 | 9 |

SOURCE: Higher Education Coordinating Board, Survey of Applicants, (1987).

1986, the average DAT score on academic portions of the test was 4.65, compared to a national average of 4.33. Minnesota ranked 21st in the nation.

On an index made up of the average academic DAT score, perceptual ability DAT score, total undergraduate GPA, and undergraduate science GPA, the University of Minnesota ranked 16th out of 57 U. S. dental schools.

## IS THE UNIVERSITY OF MINNESOTA AFFORDABLE?

Recently, higher costs being charged to health professions students have led to fears that many able students will be unable to finance professional education. This denial of opportunity would restrict the talent pool needed to sustain the highest quality of health care and limit students' career options on the basis of economic ability.

### Applicants to the School of Dentistry

Applicants to the University of Minnesota School of Dentistry who turned down offers of admission in 1987 were surveyed to identify their reasons. As discussed earlier in this chapter, 34 out of 38 respondents entered another dental school. Two applicants chose other professions, optometry and medicine. Better working conditions and career enjoyment, rather than financial constraints or objectives, were identified as reasons for these career choices.

Two applicants indicated that they may enter dental school later. Both checked financial reasons for deferring admission. One cited an inability to finance expenses and a desire for additional academic preparation before entering. The other is finishing a baccalaureate degree and re-evaluating his interest in dentistry. A secondary factor in his decision, however, is a concern about paying back loans to attend dental school.

## Student Characteristics and Equal Opportunity

Dental students finance their education as young adults. In 1985-86, the average dental student at the University of Minnesota was 25.3 years old. Entering students in 1986-87 ranged in age from 21 to 38 years old.

A third of the students in 1985-86 were married, and two-thirds considered themselves financially independent from their parents. They tended to come from middle and upper middle income families. Still, 12 percent said that their parents earn less than $20,000 a year, and 23.3 percent said that they earn less than $30,000.[22]

Twenty-seven percent of University of Minnesota dental students in 1986-87 were women, the same as the national average. The University ranked 26th out of 57 public dental schools in the proportion of women students.

Only two percent of the first-year students at the University in 1986-87 were from minority racial or ethnic groups, placing the University last nationally among all public dental schools in the percentage of minority students entering that year. Nationally, 24 percent of first year dental students were from minority groups.[23] In 1987, the University was more successful in enrolling minority students; 13, or 13 percent of the entering class, began dental school in 1987-88. Special efforts, including a state appropriation for minority health professions students, are being made to attract and retain students from minority groups.

## Attrition

Once enrolled, few students leave dental school because of financial problems. Since 1980, three University of Minnesota dental students withdrew for financial reasons, and two dropped their course loads to part-time.

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[22] University of Minnesota, Health Sciences Students' Financial Aid Survey Report 1986-1986.

[23] ADA, Annual Report on Dental Education 1986/87.

Students report being anxious about their ability to finance dental education. In 1985-86, 42 percent reported considerable anxiety, and 52 percent reported some anxiety about financial problems.[24]

**Sources of Financial Aid**

The University of Minnesota does not have a complete picture of the financial aid available to its dental students. Some major fellowships are sponsored by national professional groups or by the armed forces and federal government in return for service in needed areas.

It is clear, however, that scholarships and grants are relatively rare, and loans are nearly universal. A 1984 survey showed that only two percent of the dental students had federal scholarships, two percent had state scholarships, and eight percent had other scholarships. Earnings or savings were used by 74 percent of the students, and 83 percent reported borrowing to finance their professional education.[25] University information on financial aid for health professions students focuses exclusively on available loan programs, with the exception of federal and state grants for minority students and disadvantaged students with exceptional financial need. The dental school states that private scholarships range from $400 to $600 a year, too low to be a major source of financing to recipients.

**Loan Levels**

University of Minnesota dental students, like their counterparts in other universities, rely heavily on debt to pay for dental education. Because loans also are used frequently to finance undergraduate education, students have accumulated significant obligations before beginning practice.

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[24] University of Minnesota, Health Sciences Students' Financial Aid Survey Report 1985-1986,

[25] University of Minnesota, Health Sciences Students' Financial Aid Survey Report (December 27, 1984).

In a survey of 1985-86 University of Minnesota dental students, 78 percent reported having educational debts acquired prior to dental school. The average debt for these students was $7,605; 11 percent had borrowed more than $10,000.

Nearly all students, 93 percent of those reporting, anticipate borrowing during dental school, with the average debt expected to be $31,143. Nine out of 253 students expect to borrow more than $50,000. Many students use loans as their major source of financial support during dental school. Of those reporting, 99 students, or 43 percent, said that loans would be used for more than three fourths of their expenses.

When undergraduate and professional school loans are combined, 94 percent of the dental students expect to owe an average of $36,700 at graduation. Twenty-six students, or 10 percent of those reporting, expect to owe more than $50,000.[26]

University of Minnesota students appear to borrow more than average for students at a public dental school. A national survey of 1986 graduating seniors reported an average entering debt of $3,970 and an average graduating debt of $28,900.[27] Minnesota students, when those without debt are included, reported an average entering debt of $5,912 and a projected average graduating debt of $35,949. It is difficult to say why average entering debt is high at the University of Minnesota. It is possible that relatively many students attended high cost undergraduate colleges or that Minnesota has succeeded in retaining low income students through undergraduate education and

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[26] University of Minnesota, Health Sciences Students' Financial Aid Survey Report 1985-1986.

[27] Eric S. Soloman and Daniel J. Stoll, "Update 1986 Senior Survey: Dental Seniors' Debt Appears to Be Leveling Off," Journal of Dental Education, vol. 50 (September 1986), pp. 553-555.

into professional school. The high graduating debt may be attributed to Minnesota's high tuition for a public institution.

The national data show that dental students are coming increasingly from more affluent families, an indication that dental education may be becoming inaccessible to students without independent sources of support. The national data also show students from higher income families borrow less than students from lower income families, but survey data from the University of Minnesota do not confirm that trend here. Possibly a relatively high proportion of University of Minnesota students are financially independent of their parents. Students who are financially independent anticipate greater borrowing than students who consider themselves dependent on parents. For example, 39 percent of the financially independent students expect to owe more than $40,000 at graduation compared to 14 percent of the dependent students.

**Effects of Current Debt Levels**

Dental students with high levels of anticipated debt report more anxiety about their finances than students with low debt. Forty-nine percent of the students who expect to owe more than $30,000 report considerable anxiety about financial concerns compared with 33 percent of those who expect to owe less than $30,000.

The level of anticipated debt also is related to students' expected career decisions. Virtually all students say that debt will be a factor in choosing how or where they will practice dentistry. Fifty percent of the students who expect to owe more than $30,000 say that debts will be an important factor in making employment decisions compared with 28 percent of those who expect to owe less than $30,000.

Loan Debt and Ability to Repay Under Current Tuition Policy

The level of educational debt that students can manage after graduation depends on the repayment provisions, other financial obligations, and psychology of the borrower. Estimates of affordable debt repayment vary greatly, ranging from 3 percent to 15 percent of income.[28] When the Graduated Repayment Income Protection (GRIP) program was designed, payments were set at 10 percent of graduates' anticipated income. In this section, therefore, University of Minnesota debt levels are compared to a "manageable" repayment of no more than 10 percent of income each year.

Projected incomes of dentists were identified as part of the planning for the GRIP program.[29] First year dentists were assumed to earn an average of $28,000 which would allow a debt repayment of $2,800. Assuming 10 year repayment and an interest rate of 8.3 percent, based on the distribution of debt under different student loan programs, dental students can afford to borrow a maximum of $19,000 in order to avoid the need to repay more than 10 percent of income in their first year of practice. Survey results for 1985-86 University of Minnesota dental students indicate that at least 221 students, 87 percent of those providing information on anticipated debt, expect to owe more than $19,000.

The maximum debt level increases significantly, to $57,000, under the GRIP program. At debts exceeding $57,000, a borrower will not pay off the loan within 20 years if only 10 percent of income is directed toward repayment. When this happens, the GRIP program accelerates payments to greater than 10 percent in order to pay back all loans in 20 years. Fourteen

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[28] Terry W. Hartle and Richard Wabnick, "The Educational Indebtedness of Graduate and Professional Students," National Commission on Student Financial Assistance (April 1983).

[29] Minnesota Higher Education Coordinating Board, Design for the Proposed Income Contigent Loan Repayment Program, (August 11, 1986).

University of Minnesota dental students expect to owe more than $57,000 at graduation. Even if these students take advantage of GRIP, they will need to devote more than 10 percent of their income to debt repayment unless their incomes substantially exceed the averages for the profession.

Under current tuition policies, nearly all dental students are borrowing more than they can repay within 10 percent of their incomes in the early years of practice. The GRIP program could help most of these students manage their debt within this standard. Some students, however, would exceed 10 percent of income in repayment under GRIP.

**Loan Debt and Ability to Repay Under a Cost-Related Tuition Policy**

If all students at the University of Minnesota paid 33 percent of their costs of instruction in tuition, dental students would pay an estimated additional $12,000 during a four year program. In estimating manageable debt limits under cost-related tuition, it was assumed that today's dental students would have graduated with $12,000 more debt than they now anticipate.

Based on this assumption, the number of students who would need to devote more than 10 percent of their income to debt repayment during the early years of practice would increase from 221 to 236 under a conventional student loan repayment scheme. Under GRIP, 58 students, rather than 14, would need to increase payments beyond 10 percent.

**CONCLUSIONS**

- The University of Minnesota School of Dentistry has experienced a decline in the number and quality of applicants. This trend is consistent with national developments and exists, in part, because of deteriorating employment and income in the dental profession. Although changes in the academic records of entering students are of great concern to the profession, it is less clear that today's students will be inadequate dentists.

- In addition to facing national trends, the School of Dentistry must deal with relatively high tuition charges when it recruits students. In past years, state residents would have had difficulty gaining admission to other public dental schools; now, many schools are aggressively recruiting out-of-state students. To date, there is little evidence that the University loses state residents to other dental schools because of costs. If cost-related tuition is expanded, however, the School of Dentistry will be less competitive on the basis of price, and more Minnesota residents may leave the state.

- The University of Minnesota is losing out-of-state applicants because of high costs.

- University of Minnesota dental students borrow heavily to finance their education. Most will exceed 10 percent of their incomes in repayment, at least during the early years of practice. A few students would be unable to pay back their loans within 20 years under the standard GRIP repayment schedule.

- Cost-related tuition would result in more students needing to borrow above manageable levels if they earn average incomes for dentists. At the higher tuition charges, about a fourth of the graduates would need to devote more than 10 percent of their income to debt repayment under GRIP.

## CHAPTER V. PHARMACY

The University of Minnesota College of Pharmacy has educated 55 percent of the registered pharmacists in the state. Nearly 85 percent of its graduates remain in Minnesota to practice. The current undergraduate professional enrollment is 321.

### OVERVIEW OF TRENDS AND CONDITIONS IN PHARMACY

In the past, most pharmacists dispensed drugs in independently owned pharmacies. Increasingly, however, pharmacists are employed by hospitals or drug store chains, and the distribution of drugs has been automated or delegated to assistants whenever possible to cut costs. The role of the pharmacist is changing to expand information and counseling given to pharmacy clients. In hospitals, pharmacists are taking on more clinical functions in managing patient care as members of a health care team. This role is expected to grow as drugs become more complex, potent, and expensive.

### Pharmacists' Supply and Demand

Minnesota had an estimated 3,576 active pharmacists in 1984 and ranked 13th out of 51 states and the District of Columbia in the number of pharmacists per 100,000 residents. Between 1980 and 1984, the number of active pharmacists grew by 10 percent nationally and by 27 percent in Minnesota.[30]

The U. S. Department of Health and Human Services projects a close balance between the demand and supply of pharmacists in the year 2000. Currently, there are spot shortages of pharmacists, generally in

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[30] U.S. Department of Health and Human Services, Report to the President and Congress on the Status of Health Personnel in the United States.

non-metropolitan areas. In 1985, the federal government identified a shortage of 174 pharmacists nationwide with about 157,000 pharmacists employed. The University of Minnesota College of Pharmacy contends that, despite this national picture, employers in Minnesota are not able to fill all their open positions for pharmacists.

**Pharmacy Education Programs**

Seventy-three U. S. pharmacy schools are in operation, down from 77 in 1960-61. Fifty-two are at public universities.

Students can enter pharmacy education programs at the University of Minnesota after two years of college, but the average is three years of pre-professional study. Two professional degrees programs are offered. The B.S. in Pharmacy degree requires three years of professional preparation, and the Pharm.D. degree requires four or five years. Students in the B.S. program outnumber Pharm.D. students nearly 3 to 1. Professional pharmacy associations generally support the Pharm.D. degree as the desired single entry level professional degree.

**Enrollments in Pharmacy Education**

Nationally, the number of students beginning their final three years of five to seven-year undergraduate/professional pharmacy education dropped from 8,734 in 1974-75, the peak year, to 6,849 in 1984-85 and then increased to 7,632 in 1986-87.[31]

University of Minnesota pharmacy enrollments grew rapidly in the 1960s and peaked at 409 students in fall 1975. Enrollments then fell, reaching 282 in fall 1983. In recent years, enrollments again have increased.

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[31] Ibid. and Richard P. Penna and Michael S. Sherman, Enrollments in Schools and Colleges of Pharmacy 1986-1987 (Alexandria, Virginia: AACP, July 1987).

**Contract Agreements**

The University of Minnesota does not have contracts with other states to provide pharmacy education.

**OVERVIEW OF APPLICATION TRENDS AT THE UNIVERSITY OF MINNESOTA**

Pharmacy differs from dentistry in that it has not experienced an oversupply of practitioners. Concern over the selectivity of schools of pharmacy also does not appear to be a critical national issue as it is in the dental profession.

University of Minnesota applications for entry-level students fell from 336 in 1976 to 118 in 1983. While class size also decreased during these years, the percentage of applicants who enroll increased from 37 to 72 percent. Unlike dentistry, however, the increase in the percentage of applicants accepted and enrolled was not accompanied by a consistent drop in their academic qualifications.

Since 1983, the number of applicants has risen to 193, and the percent who eventually enroll declined to 46 percent.

**IS THE UNIVERSITY OF MINNESOTA COMPETITIVE?**

The University states that the College of Pharmacy ranks in the top five of U.S. pharmacy schools whenever the quality of different programs is compared. High tuition rates, however, are viewed as an obstacle to maintaining the quality of students needed to sustain its reputation.

**Resident Tuition and Fees**

The University of Minnesota is the most expensive public school of pharmacy in the United States based on anticipated fall 1988 tuition and fee

charges to state residents. The University's expected charges of $2,955, however, are still much less than all private pharmacy schools.[32]

If pharmacy students had paid 33 percent of their costs of instruction in tuition, they would have paid an estimated $4,722 in 1986-87 tuition and fees instead of $2,711. At this rate, the University would retain its top rank among public pharmacy schools and would, in addition, be more expensive than 2 of the 21 private and state-related schools of pharmacy.

Thirty-four out of 52 public pharmacy schools charge less than $4,722 in non-resident tuition and fees. Minnesota residents could therefore attend most public institutions as non-residents for less money than paying University of Minnesota resident charges under full implementation of cost-related tuition.

**Non-Resident Tuition and Fees**

Minnesota's anticipated non-resident tuition and fees for 1988 place it 9th out of 52 public institutions and 24th out of 73 public and private pharmacy schools.[33]

If the University had implemented cost-related tuition and continued its policy of charging non-resident students twice what it charges state residents, non-resident tuition and fees in 1986-87 would have been $9,158. All but four schools of pharmacy, all private, expect to charge less than this amount in 1988. The University would, therefore, be the most expensive public institution for non-residents and charge more than most private schools of pharmacy.

Approximately 9 percent of the pharmacy students at the University in 1985-86 paid non-resident tuition, 5 percent were from reciprocity states, and 85 percent paid resident tuition.

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[32] American Association of Colleges of Pharmacy, Pharmacy School Admission Requirements Annual Supplement (Alexandria, Virginia: AACP, 1987).

[33] Ibid.

**Where Minnesota Residents Go To Pharmacy School**

While few Minnesota students leave the state to study dentistry, the situation is quite different in pharmacy. In 1986-87, at least 118 Minnesota residents were attending out-of-state schools. The actual number is likely to be much larger because data from many institutions are incomplete, and no information was provided by the University of Kansas, the St. Louis College of Pharmacy, or the University of Wisconsin, all Midwestern institutions.[34] Higher Education Coordinating Board records indicate that four Minnesota students were attending the pharmacy program of the University of Wisconsin in fall 1986 under the tuition reciprocity agreement.

The American Association of Colleges of Pharmacy reports that North Dakota State University enrolled at least 81 Minnesota residents and South Dakota State University enrolled 28 in 1986-87. Under reciprocity agreements, Minnesota residents pay negotiated rates at these institutions. In fall 1986, a Minnesota resident paid $1,458 in tuition to attend North Dakota State University and about $1,991 to attend South Dakota State University.[35] In comparison, the University of Minnesota resident tuition that year was $2,382 for the B.S. program. It should be noted, in addition, that non-resident tuition and fees at North Dakota State University are less than resident charges at the University of Minnesota.

**Enrollment by Non-Residents**

Of the 89 students who entered the University of Minnesota College of Pharmacy in 1986, 12, or 13 percent, were from other states, and 8, or 9 percent, were from other countries. For the class entering fall 1987, 22

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[34] Penna and Sherman, Enrollments in Schools and Colleges of Pharmacy 1986-1987.

[35] South Dakota State University estimated charges are based on 17 credits per semester and include a professional school surcharge.

percent were non-Minnesotans. The University ranks 24th out of 69 reporting institutions in the percentage of non-residents enrolling this year.[36] The percent of non-residents has fluctuated since the 1970s, but has not changed in a consistent direction.

Twenty-seven public pharmacy schools give priority to residents of their states. National data on the migration of pharmacy students among the states are too incomplete to compare how Minnesota ranks in retaining its own residents.

**Reasons for Rejecting Offers of Admission**

Thirty U. S. students turned down offers to enter the University of Minnesota College of Pharmacy in 1987. All were surveyed to determine their reasons. Twenty-four, or 80 percent, replied.

As shown in Table 6, 15 of the 24, or 63 percent, rejected the University's offer in order to enter another school or college of pharmacy. None were Minnesota residents. Since a significant number of Minnesotans attend out-of-state pharmacy schools, it appears that they were not sufficiently interested in the University to submit an application. The University believes that the "sticker shock" of Minnesota's high tuition relative to the Dakotas and other states discourages potential applicants.

Like dental school applicants, applicants to the College of Pharmacy are most likely to turn down the admissions offer for personal reasons, such as a desire to remain near family. Over half the applicants, 53 percent, however, said lower tuition and fees at their chosen school were a factor, although all but one of these students also checked other reasons. All students who cited higher tuition at the University are attending a public dental school, but only one is enrolled in a North or South Dakota institution. Again, it

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[36] AACP, Pharmacy School Admission Requirements.

TABLE 6. REASONS APPLICANTS TO THE UNIVERSITY OF MINNESOTA COLLEGE OF PHARMACY DECIDED TO ENROLL AT ANOTHER PHARMACY SCHOOL (N = 15)

| REASON | NUMBER | PERCENT |
|---|---|---|
| The school that I chose is more convenient for my family and personal life | 12 | 80% |
| The school that I chose charges less in tuition and fees | 8 | 53 |
| Other reasons | 5 | 33 |
| The school that I chose offers a program that better suits my specific career interests in pharmacy | 3 | 20 |
| The school that I chose has a higher quality program | 1 | 7 |
| The school that I chose gave me a better offer of financial aid | 0 | 0 |

SOURCE: Higher Education Coordinating Board, Survey of Applicants, (1987).

appears that the University's high tuition for pharmacy students compared to competing institutions is a major factor in students' decisions to apply and to attend.

**Academic Qualifications**

Students entering the College of Pharmacy in 1987 had a mean pre-professional grade point average of 3.25. Entering GPAs have risen each year since 1981.

The University of Minnesota ranked 9th out of 65 reporting pharmacy schools in the GPA of its entering class. South Dakota State University also reported an average entering GPA of 3.25.[37]

**IS THE UNIVERSITY OF MINNESOTA AFFORDABLE?**

**Applicants to the College of Pharmacy**

Three of the 24 applicants who turned down offers of admission to the University of Minnesota College of Pharmacy and responded to a survey are entering other occupations - nursing, nutrition, and sales in the medical industry. Two decided to choose other fields because of greater personal interest. The applicant going into sales, however, cited problems in financing pharmacy education and in paying back the debt that would be incurred.

Among the four professional groups surveyed, pharmacy applicants were most likely to be considering pharmacy school later. Six out of 24 respondents may attend in a future year. Two applicants cited personal reasons, including one with a B.S. in pharmacy who indirectly attributed her decision to financial considerations. She recommended that the University offer a Pharm.D. program that allows concurrent full-time employment.

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[37] Ibid.

Four applicants directly cited financial reasons for deferral. One, apparently already a staff pharmacist, is evaluating the comparative financial rewards of clinical pharmacy and pharmacy administration. Three said that they cannot afford the costs of pharmacy education now. In all three instances, other factors seem to have contributed to the decision. One is building a home and needs to work full-time, one wants to play undergraduate football another year, and one is re-evaluating the working conditions in pharmacy.

Student Characteristics and Equal Opportunity

The range in age of entering pharmacy students in 1987 was 20 to 41 years. Because pharmacy students typically enter their professional program after only two or three years of undergraduate education, they tend to be younger than students in dentistry and other professional programs. In 1985-86, the average reported age was 24.2 years, one year younger than dental students. Consistent with their younger age, pharmacy students are also more likely to be single. In 1985-86, 21 percent were married; 68 percent consider themselves financially independent.

Most pharmacy students come from middle income families. Twenty-two percent, however, said that their parents earn less than $20,000; thirty-four percent said their parents earn less than $30,000. Pharmacy students tend to come from less affluent families than dental students.[38]

Sixty percent of the B.S. and Pharm.D. students at the University are women, about the national average. Minnesota ranks 32nd out of 73 pharmacy schools in the percentage of women students.

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[38] University of Minnesota, Health Sciences Students' Financial Aid Survey Report 1985-1986.

Only 4 percent of the University's enrollments are minority students compared to 17 percent nationally. Minnesota's international student enrollment of 11 percent is nearly twice the national total of 6 percent.[39]

**Attrition**

According to the University, no students in recent years are known to have withdrawn solely for financial reasons. The University states that students facing financial problems tend to drop to part-time status and increase their level of employment. Demanding work schedules are believed to lower some students' grades, sometimes triggering termination after poor academic achievement.

**Sources of Financial Aid**

Undergraduate pharmacy students who have not yet completed a baccalaureate degree may receive federal Pell Grants and Minnesota State Scholarships and Grants. They are unique among the fields in this study in having access to major undergraduate, need-based systems of grants. In contrast, students in other professional programs are eligible for extremely limited aid other than loans.

Eligibility for undergraduate financial aid is reflected in the relatively high numbers of pharmacy students, compared to those in other health professions programs, who report receiving scholarships and grants. In 1984, 12 percent claimed to have a federal grant, 10 percent a state grant, and 11 percent a grant from non-government sources.

Like dental students, most pharmacy students rely on loans or employment and savings to finance part of their education. In 1984, 68 percent relied on self-financing and 56 percent on loans.[40] Compared to dental students,

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[39] Penna and Sherman, Enrollments in Schools and Colleges of Pharmacy 1986-1987.

[40] University of Minnesota, Health Sciences Students' Financial Aid Survey Report (1984).

pharmacy students rely on employment for a greater portion of their expenses and on loans for a smaller portion. Pharmacy students, unlike students in dentistry and medicine, are able attend part-time, allowing more time to work while in professional education.

**Loan Levels**

Most pharmacy students borrow, but they incur smaller debt obligations than dental students. Their smaller debts are probably due to three factors. First, pharmacy programs require five or six years of undergraduate and professional education compared with eight years for dentists. Second, pharmacy students are eligible for need-based grants for part of their professional education. Finally, pharmacy programs at the University of Minnesota cost about half as much as the dental program.

Upon entering pharmacy school, 65 percent of the students owed money for their undergraduate education, based on respondents to a 1985-86 University study. Those students owed an average of $4,752; three percent had borrowed more than $10,000.[41]

Eighty-four percent anticipate borrowing during pharmacy school, with the average debt expected to be $11,444, much less than the average of $31,143 for dental school. No pharmacy student anticipates borrowing more than $30,000, but 40 percent of those reporting expect loans to cover at least half of their expenses.

At graduation, the average total debt, among the 89 percent who expect to graduate with outstanding educational loans, is reported as $13,893. Three students expect to owe more than $30,000, and the maximum expected debt is $35,000.

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[41] University of Minnesota, Health Sciences Students' Financial Aid Survey Report 1985-1986.

Like dental students, pharmacy students who are financially independent borrow more than students who receive financial support from their parents.

**Effects of Current Debt Levels**

Students with relatively high levels of expected debt are more anxious about their financial condition than other pharmacy students. Fifty-four percent of those who expect to owe more than $10,000 say they experience considerable anxiety about finances compared to 26 percent of those who expect to owe $10,000 or less.

High levels of debt also are reported by students who say that the need to repay educational loans will affect their choice of employment after graduation. Forty-eight percent of the students who expect to owe more than $20,000 say loans will be highly important in making career decisions, compared with only 13 percent of those who will owe less than $20,000. Overall, 68 percent of the pharmacy students will make career decisions partly on the basis of their outstanding loans, compared with 82 percent of the dental students.

**Loan Debt and Ability to Repay Under Current Tuition Policy**

The GRIP program has estimated that the average pharmacy graduate will earn $26,842 during the first year of practice.[42] Using the standard in the GRIP program that loan repayments exceeding 10 percent of income may be excessive, the average pharmacy student can afford to owe no more than $18,000 in educational loans at graduation. This estimate assumes an average student loan interest rate of 8.07 percent and a maximum repayment period of 10 years. Of the 163 pharmacy students indicating whether they expect to be in debt at graduation, 40 expect to owe more than $18,000.

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[42] Minnesota Higher Education Coordinating Board, Design for the Proposed Income Contingent Loan Repayment Program.

Under the GRIP program, the maximum loan increases to $34,000 because of the longer term and repayment relief during the early career years. Pharmacy students owing more than $34,000 would need to increase their GRIP repayments beyond 10 percent of the average pharmacist's income in order to complete repayment within 20 years. Only two pharmacy students expect to owe more than $34,000, and their maximum debt is only $35,000--barely over that amount.

**Loan Debt and Ability To Repay Under a Cost-Related Tuition Policy**

Under a cost-related tuition policy, pharmacy students in 1986-87 would have paid approximately an additional $2,011 a year in tuition. Conservatively, it was assumed that pharmacy students would each need to borrow an extra $2,000 a year and the weighted average length of the program would be 3.3 years, for an added debt of approximately $6,640.

Using these assumptions, the number of students who would need to exceed 10 percent of their incomes in debt repayment under cost-related tuition nearly doubles, from 40 to 75, if conventional student loan repayment terms are used. Under GRIP, 8 students, rather than 2, would need to devote more than 10 percent of their first year's income to educational loan repayment. These students should not need to exceed the regular GRIP terms by a significant amount.

**CONCLUSIONS**

- The University of Minnesota attracts very capable pharmacy students and appears to be maintaining the quality of its applicants.
- The University is faced, however, with severe price competition from schools of pharmacy in adjacent states. Currently, the University is the most expensive public pharmacy college in the nation for state residents. As a result, Minnesota residents frequently cross the state border for their professional education. Under cost-related tuition, the University also would be more expensive than many private schools and colleges of pharmacy.

- Pharmacy students rely on loans to finance their education and a significant minority borrow more than may be reasonable under their average expected income after graduation. If used, however, the GRIP program would make these loans manageable for most students.

- Pharmacy students do not appear to have the heavy debt burdens in relation to expected income that dental students incur. In other words, pharmacy education is more affordable to students than dental education.

## CHAPTER VI. VETERINARY MEDICINE

The University of Minnesota College of Veterinary Medicine has an enrollment of 294. In addition to training veterinarians and conducting research in veterinary medicine, the college maintains a hospital and clinic that provide specialized veterinary care for Minnesota and parts of the Upper Midwest.

### OVERVIEW OF TRENDS AND CONDITIONS IN VETERINARY MEDICINE

Veterinary medicine is closely allied with the needs of agriculture, and conditions in the farm economy have a large effect on the quality and quantity of demand for veterinary services. The growth of corporate farming has placed increased emphasis on disease prevention, reproduction management, and nutrition in large herds and flocks. Veterinarians are increasingly employed in protecting human health from toxic chemicals in foods and diseases transmitted by animals and animal products.

Although veterinary medicine has its roots in the care of food animals, companion animal medicine now accounts for considerably more than half the nation's demand for veterinarians.

#### Veterinarians' Supply and Demand

In recent years, the depressed agricultural economy has reduced some livestock farmers' investment in veterinary care. In addition, the number of veterinarians grew rapidly in the 1970s and early 1980s. As a result, although most graduates find employment, there is an oversupply nationally which is expected to last through the remainder of this century. This oversupply is not uniform, and some areas report shortages of food animal

veterinarians, particularly those qualified in managing animal health for large dairies and farms. The University of Minnesota reports that all graduates seeking employment as veterinarians have been able to find positions in recent years.

In 1970, the nation had 12.7 veterinarians per 100,000 residents. By 1984, this ratio had grown to 17.9. Minnesota, an agricultural state, had 26.4 veterinarians per 100,000 residents and ranked 10th out of the 51 states and the District of Columbia. Between 1980 and 1984, the number of veterinarians increased by 18 percent nationally and by 22 percent in Minnesota.[43]

Projections by both the U. S. Department of Health and Human Services and the American Veterinary Medicine Association show continuing oversupply of veterinarians in private practice through the year 2000. Both increases in demand for private practitioners and other veterinary personnel and cuts in the number of new graduates would be needed to bring supply and demand into balance.[44] Despite a projected overall surplus, there may be unmet needs for veterinarians with specialized training as industry needs and knowledge of animal health evolve.

Veterinary Education Programs

In 1970, 18 U. S. universities had programs in veterinary medicine. By 1984, 27 schools were in operation, including a new College of Veterinary Medicine at the University of Wisconsin. All but three are at public universities, generally land grant colleges.

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43 U.S. Department of Health and Human Services, Report to the President and Congress on the Status of Health Personnel in the United States.

44 J. Karl Wise and John E. Kushman, "Synopsis of U.S. Veterinary Medical Manpower Study: Demand and Supply from 1980 to 2000," Journal of the American Veterinary Medical Association, vol. 187 (August 15, 1985), pp. 358-361.

Most schools of veterinary medicine require at least two years of pre-professional undergraduate education. The University of Minnesota is one of several that require three years of college before admission. The average entering student to the University in 1986, however, had completed 4.6 years of undergraduate education.

The University of Minnesota program requires 13 quarters of work over four years. The first three years operate on an academic calendar; the fourth year requires 12 months of training.

**Enrollments in Veterinary Education**

Enrollment in U.S. veterinary education programs grew by 90 percent, from 4,716 to 8,938 between 1970 and 1985. In 1986, for the first time, enrollments dropped slightly to 8,887.[45]

The University of Minnesota maintained an entering class size of 80 until 1985. In the last two years, entering enrollment has been reduced to 64. As this planned reduction is implemented, total enrollment will decrease from approximately 310 in the early 1980s to about 246.

**Contract Agreements**

The University of Minnesota and 16 other colleges of veterinary medicine have contracts to provide veterinary education to residents of states that do not have their own schools. Because veterinary medicine, like dentistry, is faced with an oversupply of practitioners and declining numbers of applicants, contracts are being reduced or eliminated. University of Minnesota four year enrollments under contracts with Nebraska, North Dakota, and Wisconsin fell from 98 in 1978-79 to 37 in 1987-88. The contracts with Nebraska and Wisconsin are no longer in effect.

[45] Information received from the Association of American Veterinary Colleges.

## OVERVIEW OF APPLICATION TRENDS AT THE UNIVERSITY OF MINNESOTA

The number of applicants to schools of veterinary medicine dropped from 7,286 in 1980 to 4,432 in 1987. Since the number of first year places actually grew slightly during those years, the number of applicants per position decreased from more than 3 to 1 to 2.4 to 1.[46] Admission to veterinary medicine, like dentistry, therefore has become less competitive in recent years.

The University has increased its applications and reduced its class size in recent years while other schools have received fewer applications. In 1981, 8,367 applications were submitted to U. S. schools of veterinary medicine, and 2,275 students were admitted for an application per position ratio of 3.68 to 1. That year, the University received 249 applications for 80 places for a ratio of 3.11, less that the national total. In 1987, 3.51 applications were submitted nationally for each first year vacancy. The University received 274 applications and admitted 65 students for a ratio of 4.22 applications per position. In 1987, the University ranked 11th out of 27 schools in the number of applications per first year position.[47]

## IS THE UNIVERSITY OF MINNESOTA COMPETITIVE?

The University of Minnesota College of Veterinary Medicine believes that it would rank in the top five schools in the United States if national rankings were compiled. To maintain its position, the University contends that tuition and fees must be competitive with peer institutions.

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46 University of Minnesota and U.S. Department of Health and Human Services, Report to the President and Congress on the Status of Health Personnel in the United States.

47 Information provided by the University of Minnesota.

**Resident Tuition and Fees**

In 1986-87, Minnesota residents paid $4,768 in tuition and fees to attend the College of Veterinary Medicine for three quarters. The University's charges placed it 6th out of 27 U.S. schools of veterinary medicine in resident tuition and fees. Three of the universities with higher tuition and fees are private. The University ranked 3rd out of 24 public universities.[48]

If veterinary medicine students had paid 33 percent of their costs of instruction as tuition, they would have been charged $11,162 in 1986-87. That rate would have made the University the second most expensive school in the country and at least $3,400 more expensive than the next most costly public university.

At $11,162, the University also would have charged its state residents more than 12 other Big 10, Big 8, and other Association of American Universities (AAU) members charged non-residents that year. Except for the University of Illinois and Ohio State University, the difference would have been over $1,000 a year and as much as $5,700.

**Non-Resident Tuition and Fees**

Non-resident tuition and fee charges for all U. S. schools of veterinary medicine are not readily available. Among 13 Big 10, Big 8, and other AAU public universities, the University's 1986-87 non-resident tuition and fees ranked 9th highest.

If resident tuition had been assessed at 33 percent of the cost of instruction and non-residents had paid 1.5 time the resident rate, non-resident tuition and fees at the University in 1986-87 would have been $16,600. At that rate the University would have been more expensive to

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[48] Information received from the Association of American Veterinary Colleges and "Annual, Academic Year, Tuition and Required Fees Big Eight, Big Ten Public and Other AAU Public Universities, 1977-78 to 1986-87" (unpublished). There are slight discrepancies in these two sources.

non-residents than the other 12 institutions. In fact, the University's non-resident rate would have been $5,900 higher than the next most expensive institution.

**Where Minnesota Residents Go for Programs in Veterinary Medicine**

Veterinary medicine appears to be similar to dentistry in successfully enrolling nearly all Minnesota residents who enter professional programs. In 1986, 50 Minnesota residents entered programs in veterinary medicine. Forty-eight, or 96 percent, enrolled at the University of Minnesota. This high rate is typical for states with a public college of veterinary medicine. Minnesota ranked 15th out of 26 states with a veterinary medicine program retaining its own state residents.[49]

The two Minnesota residents who left the state entered Kansas State University and the University of Wisconsin. Under the tuition reciprocity agreement with Wisconsin in effect at that time, the Minnesota student paid tuition equivalent to the University of Minnesota resident rate.[50] At Kansas State University, the non-resident tuition and fee charge that year was $895 higher than resident charges at the University of Minnesota. Kansas State subsequently raised its non-resident tuition and fees for 1987-88 by $1,348.

In past years, non-residents found it difficult to gain admission to programs in veterinary medicine unless they were covered by an agreement negotiated by their home state. The drop in the number of applications received by many institutions, however, has made them more willing to admit individual non-resident students. Tuition rates in other states, therefore,

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[49] "Veterinary Student Enrollment, 1986-87," Journal of the American Veterinary Medical Association, vol. 190 (April 15, 1987), pp. 962-963.

[50] Beginning with the 1987-88 academic year, veterinary medicine, dentistry, and medicine programs at the University of Wisconsin and the University of Minnesota are excluded from the tuition reciprocity agreement.

are becoming a more important competitive factor in retaining qualified Minnesota residents.

**Enrollment by Non-Residents**

In 1986-87, the University of Minnesota College of Veterinary Medicine enrolled 28 percent of its first-year class from out of state. The University ranked 12th out of 27 schools of veterinary medicine in terms of the proportion of the class made up of non-residents. Of the 19 non-residents, 10 were from Nebraska and Wisconsin, states then having contract or reciprocity agreements with the University. North Dakota did not enroll any new students under its contract agreement that year.[51]

**Reasons for Rejecting Offers of Admission**

Twenty-six 1987 applicants to the College of Veterinary Medicine turned down offers of admission. These applicants were mailed surveys to determine their current education and career status. Twenty-three students, or 88 percent, replied. Of these, 22 enrolled at another college of veterinary medicine. All but one was a non-resident of the state.

Like dental and pharmacy students, veterinary medicine students who enrolled at another university did so most often for personal and family reasons, as shown in Table 7. Like pharmacy students, the second most common reason veterinary medicine students choose another program is lower tuition and fees at the competing institution. Ten, or 45 percent, of the veterinary medicine applicants checked this reason; several indicated that they are eligible for reduced tuition because of agreements between their home state and the other institution. One of the 10 plus 3 other students indicated a better offer of financial aid had been made by the competing institution. Thirteen students, or 59 percent, therefore, made the decision to attend

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[51] "Veterinary Student Enrollment, 1986-87."

TABLE 7. REASONS APPLICANTS TO THE UNIVERSITY OF MINNESOTA COLLEGE OF VETERINARY MEDICINE DECIDED TO ENROLL IN ANOTHER VETERINARY MEDICINE PROGRAM (N = 22)

| REASON | NUMBER | PERCENT |
|---|---|---|
| The school that I chose is more convenient for my family and personal life | 15 | 68% |
| The school that I chose charges less in tuition and fees | 10 | 45 |
| The school that I chose has a higher quality program | 7 | 32 |
| Other reasons | 7 | 32 |
| The school that I chose offers a program that better suits my specific career objectives in veterinary medicine | 5 | 23 |
| The school that I chose gave me a better offer of financial aid | 4 | 18 |
| The future of the University of Minnesota College of Veterinary Medicine seemed uncertain at the time I was making my decision | 1 | 5 |

SOURCE: Higher Education Coordinating Board, Survey of Applicants, (1987).

another veterinary medicine program because the University was not competitive financially. Two students cited financial reasons only.

The one Minnesota resident leaving the state for a program in veterinary medicine is attending the University of Wisconsin for personal reasons that would not have been affected by financing changes. At current tuition charges, the University is able to retain nearly all state residents who study veterinary medicine, but it is less successful in enrolling students from other states.

**Academic Qualifications**

Students who entered the College of Veterinary Medicine in fall 1986 had an average grade point average of 3.65 in the most recent 60 quarter credits earned as an undergraduate. This figure has not changed significantly since 1983. Student scores on the Veterinary Aptitude Test and the Graduate Record Examination also do not show an upward or downward trend since 1983.

Data to compare the University with other institutions and to document whether there have been changes nationally in students' academic ability in recent years could not be located.

## IS THE UNIVERSITY OF MINNESOTA AFFORDABLE?

### Applicants to the College of Veterinary Medicine

Only one of the 22 respondents to a survey of applicants who turned down University of Minnesota offers of admission decided not to enter a program in veterinary medicine. She has chosen a career in biology instead. Financial reasons, including the expense of veterinary education and concerns about the debt burden that would have been incurred, were factors in this decision. Personal reasons, including a move from the Twin Cities area, also contributed.

While this information does not support concerns that students, particularly Minnesota residents, are unable to pursue careers in veterinary

medicine because of high educational expenses, there may be other students who do not apply because of the cost. The number of applications from Minnesota residents declined from 151 in 1983 to 82 in 1987; there is no evidence that Minnesota residents have gone elsewhere for veterinary education so the assumption is that they have chosen other occupations. The number of applications has been maintained by increasing the numbers of non-resident applicants, but non-residents are less likely than residents to accept an offer of admission.

The University furthermore states that four to six students each year defer their admission for financial reasons, and about half these applicants do not enroll in subsequent years.

**Student Characteristics and Equal Opportunity**

Students of veterinary medicine at the University of Minnesota, with an average age of 26.5 in 1986, are slightly older than dental and pharmacy students. Sixty-seven percent are married, and 78 percent, a larger proportion than in dentistry and pharmacy, are financially independent of their parents.

Veterinary medicine students also appear to come from less affluent families than dental students. Twenty-five percent say their parents earn less than $20,000, and 40 percent say their parents' income is less than $30,000.[52]

In 1986, 49 percent of the students enrolled in the College of Veterinary Medicine were women. Nationally 53, percent are women.

Three percent of the University of Minnesota students are members of minority racial or ethnic groups compared with six percent nationally.[53]

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[52] University of Minnesota, Health Sciences Students' Financial Aid Survey Report 1985-1986.

[53] National data on gender and race received from the Association of American Veterinary Colleges.

**Attrition**

Like dentistry and pharmacy, the veterinary medicine program experiences little attrition. The University attempts to assist students with part-time employment if financial problems surface. In some instances, student work loads interfere with academic achievement.

**Sources of Financial Aid**

Virtually all the aid available to veterinary medicine students is the the form of loans. In 1984, 86 percent of the students reported borrowing money. Seventy-seven percent finance part of their expenses through work or savings. Less than 1 percent reported receiving a state or federal grant; 4 percent reported receiving grant funds from another source.[54] Among 18 reporting colleges of veterinary medicine, 98 percent of the financial aid in 1986-87 was loans.[55]

Veterinary medicine and dentistry students are similar in that nearly all students borrow, about three fourths work at least part of the year, and few qualify for grant aid. Compared to dental students, veterinary medicine students are less likely to receive support from their parents, and the support they receive appears to cover a smaller percentage of their expenses.

**Loan Levels**

On average, veterinary medicine students borrow more than pharmacy students and less than dentistry students to pay for their education. According to a 1986 University of Minnesota survey, 67 percent of the veterinary medicine students providing information about their entering debt levels had borrowed to finance their undergraduate education. Among those

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[54] University of Minnesota, Health Sciences Students' Financial Aid Survey Report (1984).

[55] Information received from the Association of American Veterinary Colleges.

with outstanding loans, the average debt was $4,971; 2 percent had borrowed more than $10,000.[56] This pattern is similar to that of entering pharmacy students.

During their professional program, 95 percent of the students responding to the appropriate survey items expect to borrow for educational expenses. The maximum projected debt for the veterinary medicine program was $47,000, and the average for students expecting to borrow was $24,523. Fifty-six percent of those responding estimate that loans are used for more than half their expenses.

When undergraduate and professional loans are combined, 97 percent of the veterinary medicine students expect to be in debt at graduation. For those with anticipated debt, the average amount expected is $27,288. Unlike dentistry and pharmacy students, veterinary medicine students who are dependent on their parents do not appear to borrow less than students who are financially independent.

Annual surveys conducted by the College of Veterinary Medicine document students' growing debt levels. These surveys are conducted after graduation and therefore include information on actual, rather than anticipated, debt. All but 2 of the 68 members of the class of 1986 had educational debts at graduation. The average debt among those with loans was $27,498. All but 5 members of the class had borrowed more than $10,000. In 1978, 12 members of the graduating class, 19 percent, reported no debt. Another 18 members had borrowed less than $10,000.[57]

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[56] University of Minnesota, Health Sciences Students' Financial Aid Survey Report 1985-1986.

[57] Information on 1986 graduates provided by the University of Minnesota. Information on 1978 graduates from Donald W. Compton and Wendell J. DeBoer, "Epilog of the Class of 1978, College of Veterinary Medicine University of Minnesota," Minnesota Veterinarian, vol. 20 (January 1980), pp. 40-42.

National data indicate that University of Minnesota veterinary medicine graduates may borrow more than average. A survey of 1986 graduates showed 82 percent had outstanding educational loans; the average debt was $23,420. Forty-six percent owed more than $20,000 compared with 82 percent of the Minnesota graduates.[58]

Effects of Current Debt Levels

Like dentistry and pharmacy students, veterinary medicine students with high anticipated debt are more anxious about their finances than students with smaller loans. Fifty-three percent of those expecting to owe more than $20,000 at graduation say they experience considerable anxiety about finances compared with 29 percent of those expecting to owe less than $20,000.

Eighty-eight percent of the veterinary medicine students say that their debts will be a factor in deciding what employment opportunities they will pursue after graduation. This percentage is much higher than reported by dentistry and pharmacy students, and like students in those programs, students with high anticipated debt were more likely to say that the debt will be a major consideration when they evaluate future employment than students with lower anticipated debt.

The high debt levels of veterinary medicine students have led to concerns that students will go into practices that focus on pet care rather than practices that serve agriculture. Recent trends in the practice choices of University of Minnesota graduates indicate a trend away from large animal practices. This trend is difficult to explain based on income alone since nationally 1986 graduates who entered large animal practices earned, on the

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[58] J. Karl Wise, "Employment, Starting Salaries, and Educational Indebtedness of 1986 Graduates of U.S. Veterinary Medical Colleges," Journal of the American Veterinary Medical Association, vol. 190 (January 15, 1987), pp. 209-210.

average, slightly more than those who went into small animal practices.[59] Instability in the agricultural economy may be a factor. The University does believe that the major effect of loans on student career decisions has been to discourage advanced training that leads to positions in teaching and research.

**Loan Debt and Ability to Repay Under Current Tuition Policy**

The GRIP program estimates that veterinarians will earn, on average, $19,000 in the first year after graduation.[60] At this income, the maximum loan that would not require repayments in excess of 10 percent of income under conventional student loan programs would be $13,000, assuming an average interest rate of 8.13 percent. Of the 200 respondents to the 1986 University of Minnesota survey of health science students who indicated their anticipated debt at graduation, 180, or 90 percent, expect to owe more than $13,000 at graduation.

The first year income used in the GRIP program appears low compared to recent salaries of University of Minnesota graduates who entered private practice. Their average salary was $21,667. With that income, a new graduate could afford to owe $14,800 and still not need to devote more than 10 percent of first year income to repayments. Fifty-six members of the class of 1986, 82 percent, however, owed more than $20,000 at graduation. Most veterinary medicine students, therefore, are borrowing more than can be repaid at the average first year income using a standard of 10 percent of income as the maximum manageable loan.

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59 Ibid.

60 Minnesota Higher Education Coordinating Board, Design for the Proposed Income Contingent Loan Repayment Program.

If veterinary medicine students take advantage of GRIP, the maximum they could borrow without making payments of more than 10 percent of the average income schedule increases to $36,000. Twenty-seven students out of 200 reporting anticipate loans of $36,000 or more.

**Loan Debt and Ability to Repay Under a Cost-Related Tuition Policy**

If veterinary medicine students in 1986-87 had paid 33 percent of their instructional cost in tuition, tuition and fees for resident students would have been $11,162 that year instead of $4,768. Assuming the entire $6,394 in additional costs had been added to each student's debt for four years of study, loans would have increased by $25,600. Under this assumption, all veterinary medicine students would need to borrow more than they could repay using no more than 10 percent of their first year income.

Under the GRIP payment schedule, a student could owe $36,000 at graduation and stay within a 10 percent of average income repayment plan. As an estimate of the number that would need to exceed 10 percent of income in GRIP repayments under cost-related tuition, it was assumed that students who now owe $10,400 or more would reach this figure because their debts would increase by $25,600. Of the 200 veterinary medicine students who estimated their indebtedness at graduation, 183, or 92 percent, expect to owe more than $10,400 under current tuition and presumably would exceed $36,000 in debt if cost-related tuition were implemented. As corroboration, all but 5 of the 1986 graduating class owed more than $10,000.

Compared to dentistry and pharmacy students, veterinary medicine students would experience the greatest increase in resident charges under cost-related tuition policies. That change, combined with their relatively high levels of debt under existing tuition and their relatively low beginning salaries, would push most of today's students to intolerable debt levels, even with the

availability of the GRIP program. It seems doubtful that students would accept these levels of indebtedness. The University would be unable to fill its classes or would need to locate prospective students who could rely on substantial support from their parents or spouses.

## CONCLUSIONS

- Like dentistry, veterinary medicine is experiencing an oversupply of practitioners and declining numbers of applicants. A decline in the academic qualifications of applicants has not been documented, as it has in dentistry, and the quality of the University's applicants has been stable in recent years.

- The University of Minnesota is one of the most expensive schools of veterinary medicine in the country. Current tuition levels discourage a substantial number of non-resident students. If tuition were raised to 33 percent of instructional cost, the University's price would be uncompetitive.

- At current tuition levels, the University enrolls nearly all Minnesota residents who enter programs in veterinary medicine. As competition for admission decreases in other states, however, out-of-state schools may be more willing to admit Minnesota residents, and many of them charge less than the University of Minnesota. If the University charged residents 33 percent of the cost of instruction, there would be strong financial incentives for Minnesota residents to leave the state for veterinary education.

- Nearly all veterinary medicine students borrow heavily to finance their education, and their debts appear to be out of line with average incomes in the profession. The imposition of cost-related tuition, unless accompanied by non-loan sources of aid, probably would make education in veterinary medicine inaccessible to many prospective students.

## CHAPTER VII. MEDICINE: FACING THE SAME TRENDS

Dentistry, pharmacy, and veterinary medicine were selected for this study because preliminary analysis showed that the imposition of cost-related tuition in these fields would make the University of Minnesota uncompetitive with other universities and force students to assume unreasonable loan burdens. This chapter briefly reviews similarities in the health professions used as case studies in the report with medicine, the largest health professions program at the University and a major contribution to the University's national and state role in health care and research.

### BACKGROUND

Although the University faces special problems because of state and internal policies that encourage cost-related tuition, many of the trends in dentistry and veterinary medicine, in particular, are national. Further, in other professions as well, costs and student debts are rising rapidly, and the quantity and quality of applicants are falling. As one article put it:

> The challenge for professional schools is to maintain the qualitative gains of the expansion period (the 1970s) in the context of a declining applicant pool.[61]

At the University of Minnesota, medical students on the Twin Cities campus pay close to 33 percent of their instructional cost already, so the imposition of cost-related tuition would not have a large impact. The University is concerned, however, that medicine will not be able to attract the quality of students needed to maintain the reputation of the Medical

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61 Susan Watson; Alan Meyer, and Stephen Wotmen, "Factors Affecting Applications to Professional Schools of Six Professions (Medicine, Dentistry, Nursing, Law, Social Work, and Public Health)," Journal of Dental Education, vol. 51 (March 1987), p. 134.

School and the quality of medical care in Minnesota. The University's request for a tuition offset to maintain tuition in certain health professions programs at 25, rather than 33, percent of the cost of instruction therefore includes medicine.

Because medicine is so significant to the University and to the state, this chapter briefly describes how medical education is coping with problems in recruiting and financing qualified students.

## OVERVIEW OF APPLICATION TRENDS

Nationally, the number of applicants to U. S. medical schools peaked around 1976-77 at 42,155. Since that year, the number of applicants has been dropping, and by 1986-87 had fallen by 26 percent to 31,323. During those years, first year enrollments in medical school grew from 15,667 to 16,779. The combination of these two trends meant that the percentage of applicants accepted increased from 37 percent in 1976-77 to 55 percent in 1986-87.[62]

This decrease in the selectivity of medical schools is causing concern that medicine is losing its traditional attractiveness to "the best and the brightest" college graduates. Medical educators, concerned about maintaining the high quality of their programs, are calling for intensive efforts to sell the benefits of medical careers to prospective students.[63]

The drop in the number of applications is thought to be the result of several factors, including a decline in the number of arts and science graduates, growing costs, and diminishing financial aid. Many contributing factors, however, have to do with changes in the attractiveness of careers in medicine. An oversupply of physicians in many locations and practice

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62 Anne E. Crowley, Sylvia I. Etzel, and Edward S. Peterson, "Undergraduate Medical Education," Journal of the American Medical Association, vol. 258 (August 28, 1987), pp. 1,013-1,020.

63 Jean Evangelauf, "Medical Schools Urged to Revamp Curricula and Renew Recruiting Efforts," The Chronicle of Higher Education, vol. 34 (November 18, 1987), pp. A16-A17.

specialties leads to competition for patients. Malpractice insurance rates are skyrocketing, and third party payers are insisting on cost control. All these trends are suppressing growth in physician incomes and limiting the appeal to students previously motivated by high financial rewards of medicine. For other students, less motivated by money, these trends signal growing bureaucratization in medicine, more regulation, and less independence.[64]

Applications to the University of Minnesota Medical School in the Twin Cities dropped from 1,170 in 1982-83 to 949 in 1986-87. This decrease of 19 percent was greater than the national decrease of 12 percent during those years.

Since 1981, the number of applicants to medical schools from Minnesota has dropped 37 percent, from 857 to 574. This drop is the largest for any state.[65]

## IS THE UNIVERSITY OF MINNESOTA COMPETITIVE?

### Resident Tuition

There are 128 accredited medical schools in the United States. Of 119 reporting institutions, the University's tuition ranks 61st from the most to the least expensive. Of 70 reporting public medical schools, the University ranks 13th. The data on which these rankings are based generally included 1988-89 tuition, but the University's tuition is for 1987-88. The

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64 Results of a recent survey at the Duluth School of Medicine show that a majority of the students believe that loss of autonomy combined with the financial pressures of medical school and medical practice are making medicine a less attractive career. See Frederic W. Hafferty and James S. Boulger, "A Look by Medical Students at Medical Practice in the Future," Journal of Medical Education, vol. 61 (May 1986), pp. 359-367.

65 Information from the American Association of Medical Colleges Division of Student Services provided by the University of Minnesota.

University's rankings probably would be higher if 1988-89 tuition, which has not been established, was used in the comparison.[66]

**Non-Resident Tuition**

Of 115 medical schools reporting, the University of Minnesota ranks 58th in non-resident tuition. Of 67 reporting public institutions, the University ranks 18th.

**Where Minnesota Residents Go for Medical School**

In 1986-87, 285 Minnesota residents entering U. S. medical schools were identified. Two hundred fifty residents, or 88 percent, entered Minnesota medical schools. The University of Minnesota enrolled 230, or 81 percent, including 184 at the University of Minnesota Medical School (Twin Cities) and 46 at the Duluth Medical School. Another 20 Minnesota residents enrolled at Mayo Medical School.[67]

Thirty-five Minnesota residents entered medical schools in other states. Nine of these students entered public medical schools and 26 entered private schools. The percentage of Minnesota residents entering out-of-state medical schools appears to be dropping. In 1981, 59 Minnesota residents, or 16 percent of Minnesota medical students, entered schools in other states.

**Enrollment by Non-Residents**

Of the 193 students who entered the University of Minnesota Medical School in 1986-87, 9 students, or 5 percent, were residents of other states.

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[66] "Medical Education in the United States," Journal of the American Medical Association, vol 258 (August 28, 1987), Appendix II, Table 2, pp. 1,047-1,077. The information in this table is wrong for the University of Minnesota. To compute rankings, the correct University tuition for 1987-88 was compared to the estimated 1988-89 tuition listed for other universities.

[67] "Medical Education in the United States," Appendix II, Tables 4 and 5, pp. 1,081-1,087.

**Reasons for Rejecting Offers of Admission**

One hundred five applicants to the University of Minnesota medical schools in the Twin Cities and Duluth turned down offers of admission in 1987. Seventy-nine applicants, or 75 percent, responded to a survey about their current education and career status. Of these respondents, 72 applicants, or 91 percent, entered another medical school. Thirteen of the 72 turned down an offer from the Twin Cities campus to enter the Duluth School of Medicine. Another applicant died after entering another medical school. These students are excluded from the totals below and on Table 8.

The most common reasons for selecting another medical school were perceptions about program quality and focus, location and other convenience factors, and miscellaneous reasons, including class size and treatment during the application process.

Seventeen applicants said tuition and fees were lower at their chosen institution, 9 said that they got a better financial aid offer, and 3 gave both financial reasons. A total of 29 applicants, or 50 percent of those responding, said that financial factors led, in part, to a decision not to enroll at the University of Minnesota. Four of these students cited financial reasons only.

One applicant attached a lengthy note commenting on the admission process of the University, but concluded by saying:

> Minnesota is an excellent school, but the price differential between the U and several top quality private schools is not really that significant, especially considering that some of the better endowed private schools have generous aid, loan, and scholarship programs. In addition, several high quality public universities have lower out-of-state tuition rates than in-state tuition at the U!! (Notably California and some of the Texas schools) and they allow students to pay in-state rates after the first year. I'm not arguing that the legislature should more generously subsidize medical education in Minnesota. I do believe, however, that as the medical school applicant pool shrinks, the U may have trouble maintaining the quality of its students unless it can offer better financial incentives or unless it reduces class size.

TABLE 8. REASONS APPLICANTS TO THE UNIVERSITY OF MINNESOTA MEDICAL SCHOOL AND DULUTH SCHOOL OF MEDICINE DECIDED TO ENROLL AT ANOTHER MEDICAL SCHOOL (N = 58)

| REASON | NUMBER | PERCENT |
|---|---|---|
| The school that I chose has a higher quality quality program | 24 | 41 |
| The school that I chose is more convenient for my family and personal life | 22 | 38 |
| The school that I chose offers a program that better suits my specific career interests in medicine | 21 | 36 |
| Other reasons | 21 | 36 |
| The school that I chose charges less in tuition and fees | 20 | 34 |
| The school that I chose gave me a better offer of financial aid | 12 | 21 |

SOURCE: Higher Education Coordinating Board, Survey of Applicants, (1987).

This student, a Minnesota resident, is attending Washington University in St. Louis.

### Academic Qualifications

Despite a decline in the number of applicants to medical school, the average pre-professional grade point average and scores on the Medical College Admission Test of accepted applicants do not show a clear nationwide trend between 1981 and 1987. Similarly, these indices of academic ability have remained stable at the University of Minnesota over the past seven years.

Although changes in measured academic ability are not apparent, the quality of medical students could be changing in other ways. Research at other universities has shown that achievement in medical school does not seem to be related to undergraduate grade point average for students entering with a 3.00 GPA or better.[68] Other characteristics, such as motivation and interpersonal strengths, make the difference between competent and outstanding physicians. With a smaller applicant pool, universities may not be as selective on these important characteristics. At least one physician, however, notes that the profession will not suffer if potential students who were previously attracted by extremely high incomes no longer seek medical careers.[69]

## IS THE UNIVERSITY OF MINNESOTA AFFORDABLE?

### Applicants to University of Minnesota Medical Schools

Three out of 63 applicants who decided not to enter one of the University of Minnesota medical schools have chosen careers outside medicine. One is running a financial consulting firm which he believes will offer better

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[68] David G. Johnson, Physicians in the Making (Jossey-Bass Publishers, 1983), pp. 96-100.

[69] Donald Kornfeld: "The View from Medicine," Journal of Dental Education, vol. 51 (March 1987), pp. 148-151.

working conditions and financial rewards than medicine. One has chosen veterinary medicine for its personal rewards. The third has entered accounting because the working conditions and employment opportunities were thought to be better. This student comments:

> In my opinion, prospective medical students are starting to question whether the quality of life physicians have is worth the grueling process to enter medicine. Pre-meds are being discouraged from entering medicine from physicians who are practicing in today's medical environment.

Four applicants are delaying entry to medical school. Two of these students indicate that they made this decision because they cannot afford the costs of a medical education right away.

**Loan Levels**

Increasing costs of medical education, like other health professions programs, have led to larger and larger debts held by graduating medical students. Among 1987 graduates of the University of Minnesota Medical School, 90 percent had outstanding students loans; 59 percent had entered medical school with loans for their undergraduate education. The average debt of those students with loans was $35,621, about $1,000 less than the average debt expected by University of Minnesota dental students. Twenty-one percent of the 1987 graduating medical students owed $50,000 or more.

The average debt among students who borrowed has increased from $29,943 in the two years since the 1985 graduating class. The percent graduating with no debt, however, has increased from 4 to 10 percent. This trend may indicate that medical students are separating into two groups: those with family or other resources capable of paying for their medical education and those willing to assume large debts.

University of Minnesota Medical School graduates are more likely than students nationally to have borrowed money to pay for their undergraduate and professional education. The average debt at graduation for students with outstanding loans, however, is nearly identical to the national average.[70] National data show that the average debt for all graduates with debt was $33,499, but for black, American Indian, Mexican American, and Puerto Rican students the average was $40,000. The average debt for minority students also is increasing faster than the average for all students combined.[71]

A 1986 University of Minnesota survey of students at the Duluth Medical School indicates that Duluth students had higher debts for undergraduate education and anticipate owing more upon graduation from medical school than 1987 graduates of the Medical School in the Twin Cities.[72]

Loan Levels and Ability to Repay

Medical and dental students at the University of Minnesota appear to graduate with similar amounts of debt. Physicians, however, earn on average much more than dentists and should, therefore, experience less difficulty in repaying their loans.

Following graduation from medical school, physicians participate in a three year residency program in which they receive a salary. In planning for the GRIP program, average residents' salaries for 1986 graduates were assumed to be $20,000 the first year, increasing to $22,889 for the third year. As graduates enter practices the fourth year after graduation, their incomes increase sharply and also begin to diverge depending upon practice specialty. 1986 graduates who entered family practice, general practice, pediatrics, and

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70 Information from the Association of American Medical Colleges Medical Student Graduation Questionnaire provided by the University of Minnesota.

71 Paul Jolly, Leon Taksel, and Robert Beran, "U.S. Medical School Finances," Journal of the American Medical Association, vol. 258 (August 28, 1987), pp. 1,022-1,030.

72 University of Minnesota, Health Sciences Students' Financial Aid Survey Report 1985-1986.

psychiatry were expected to earn $48,816 during their first year of practice while physicians in other fields were expected to earn $60,135.

Many student loan programs defer repayment for all or part of the residency period. The Minnesota Student Educational Loan Fund (SELF), the University of Minnesota Trust Fund Loans, and the Minnesota Medical Foundation Loans, however, do not offer deferrals. Assuming a residency salary of $20,000, a medical school graduate could afford to borrow only $15,500 subject to repayment during residency or face a repayment obligation of more than 10 percent of income. Among 1986 University of Minnesota Medical School graduates, only 16 percent had no loans or had borrowed less than $15,000.

In order to avoid repayments of more than 10 percent of income during the first year of practice, the average physician in family practice, general practice, pediatrics, and psychiatry graduating in 1986 could afford to borrow no more than $33,000, and the average physician in other fields could afford to borrow no more than $41,000. More than half the University of Minnesota graduating class that year, 53 percent, borrowed more than $30,000; 13 percent borrowed more than $50,000.

Under the GRIP program, a physician in family practice, general practice, pediatrics, and psychiatry would pay more than 10 percent of the average income schedule if eligible student loans exceed $76,000. Two 1986 graduates had debts of more than $75,000, indicating that these physicians would have difficulty repaying even under GRIP if they earn average incomes for the relatively low paying specialties. If these physicians entered other specialties or earned above average income, their debts would be manageable as defined by the design of the GRIP program.

## CONCLUSIONS

- Like dentistry, medicine faces a smaller applicant pool, but unlike dentistry, there is less tangible evidence of change in the characteristics of applicants. In both professions, there is an assumption that a smaller applicant pool will ultimately damage the quality of health care. In both professions, growing regulation and limits on practice, an oversupply of practitioners in many locations, and flattened growth in incomes are partly responsible for the decrease in applicants.

- Tuition in the University of Minnesota schools of medicine is among the highest in the country for a public institution. Financial considerations appear to be a factor in causing students to enroll in another university for nearly half the applicants who turn down offers of admission in favor of another medical school.

- Student debt levels are increasing and to the extent that loan repayments are required during residency, most borrowers will need to devote more than 10 percent of income to repayment during those years. A physician graduating in 1986 with an average debt would need to devote more than 10 percent of income to repayment in typical family practice, general practice, pediatrics, and psychiatry positions. In other specialties a small number of physicians would experience repayments that exceed 10 percent of income.

## CHAPTER VIII. OPTIONS

In dentistry, pharmacy, veterinary medicine, and medicine, University tuition is relatively high for a public institution, and there is evidence that the University loses potential out-of-state students because other universities offer lower tuition or, more rarely, better financial aid. In all four fields, students borrow heavily to finance their professional education, and student debts have been increasing. While potential incomes are high, some students are borrowing large amounts relative to average income. If resident tuition were set at 33 percent of the cost of instruction, these problems would become more acute in dentistry, pharmacy, and veterinary medicine. This chapter examines state and University policy options to address these problems.

### POLICIES IN OTHER STATES

An informal telephone survey of 49 states uncovered few comprehensive state-level financial aid programs to assist graduate or professional students. Most respondents indicated that their state financial aid programs are directed primarily at undergraduates. Furthermore, they said programs for graduate and professional students are especially likely to be reduced or eliminated in times of financial stress. Nevertheless, the National Association of State Scholarship and Grant Programs reports that 21 states and Puerto Rico have need-based aid programs for graduate or professional students while 16 have non-need-based programs.[73]

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[73] National Association of State Scholarship and Grant Programs, 18th Annual Survey Report 1985-86 Academic Year (Harrisburg, Pennsylvania: Pennsylvania Higher Education Assistance Agency, January 1987).

Many state sponsored programs are designed to promote specific state manpower objectives. Aid to students in the health sciences is often in the form of grants with return service obligations. These programs require the financial aid recipients to practice in the state, often in underserved areas. Between 1973 and 1981, Minnesota provided loan capital to medical and osteopathic students with forgiveness of the loans based on practice in areas of the state with a shortage of physicians. Another common form of aid, including a special Minnesota appropriation, is targeted to disadvantaged and minority students.

Some states maintain a low tuition policy in preference to direct aid to students. California, for example, charges only $1,350 a year to state residents in all graduate and professional programs, regardless of program cost. Other states allocate funds to institutions for research and teaching assistantships.

Contract agreements to provide access to professional programs in other states are another common response. Contract programs in the health sciences, however, are becoming less popular with states now that most professions are not experiencing shortages and residents have less difficulty in gaining admission to professional programs. Minnesota contracts with out-of-state osteopathy and optometry schools are being phased out.

Much of the available grant and scholarship aid to professional students appears to be awarded by individual institutions from private funds or general state appropriations. It is difficult to quantify and compare these sources, but at some universities, substantial sums are awarded. The University of Illinois, for example, awarded $306,550 to 205 medical students on the basis of need. Michigan State University awarded 269 medical students an average of $1,618, again on the basis of need.

## POLICY CONSIDERATIONS

Three practical and philosophical questions provide a framework for alternatives:

What problems should be addressed?

- What are the proper roles of the state and University in addressing these problems?
- Should solutions be targeted to programs or to students?

### What Goals?

State and University policy decisions will rest on the relative weights given to three potential goals for health professions programs:

**Meeting Important Occupational Needs.** First, there is evidence of declining student interest in the health professions. Generally, this diminished interest is not leading to shortages but is lowering the selectivity of professional programs. To date, the decline in the academic qualifications in entering students is most evident in dentistry, but the other professions fear that they may not be able to maintain the quality of their entering classes. Ultimately--no one is sure when--the quality of health care could be damaged.

Special funding could be one response to recruit the most qualified students into the health professions. A major assumption underlying this decision would be that the public has an interest in steering qualified students to the health professions in preference to other occupations they might choose. Policies to address this problem could be limited easily to identified health professions programs. If policy changes were directed toward recruiting qualified students to the health professions, both Minnesota residents and non-residents probably would be covered.

**Maintaining a Strong University.** A second purpose of policy changes would be to improve the University's ability to compete with peer institutions for the best professional students. Tuition and fee charges at the University are relatively high for a public institution and would be even higher if cost-related tuition is pursued further.

If adjustments are made to contain tuition for competitive reasons, other programs experiencing similar problems might ask for relief. Since the University is seeking to improve its standing as a national institution, funds awarded for competitive purposes presumably would be used to recruit both residents and non-residents of Minnesota.

**Providing Educational Access.** A third purpose of policy changes would be to protect and enhance the financial access of professional education to students. Professional students must borrow extensively to finance their education, in some cases out of proportion to their future incomes. Further imposition of cost-related tuition would worsen these problems, perhaps limiting the health professions to students with independent sources of support.

If financial access is used as a justification for special funding policies, the financial problems of other graduate and professional students also might merit consideration. State undergraduate financial aid programs that do not discriminate on the basis of program choice would be a likely model to extend to graduate and professional students. Unlike policies directed toward the two previous goals, policies to affect financial access might be limited to state residents.

**Whose Responsibility?**

**University of Minnesota.** Under existing state policy, the problems identified in this report are supposed to be addressed by the University of

Minnesota within its overall funding levels. In other words, the University may adjust expenditures and tuition in various programs to encourage students to enter the health professions, to remain competitive with peer institutions, or to assure that tuition is consistent with students' ability to arrange financing. This policy affords maximum discretion to the Board of Regents in determining program funding to remain competitive and affordable.

State Government. Proposed changes to state policy, including the University's request for a tuition offset, would recognize a state responsibility to intervene because of the nature and extent of the problems facing the health professions. Special state appropriations, in whatever form, would acknowledge that the extremely high costs of health professions education place exceptional pressures on the University. Other public institutions have less spread in instructional costs and are able to finance their relatively high cost programs internally without placing an unreasonable burden on students in other programs. The University further contends that the importance of health care to the state means that the public, rather than other University students, should share in the added costs of health professions education.

**What Form of Targeting?**

A third set of policy issues is the targeting of financing for the health professions. The University proposes that the state finance certain health professions programs at 75 percent of the cost of instruction, rather than at 67 percent used to establish the appropriation level of all other instruction. The intent of this proposal is to constrain tuition increases in health professions programs. All students in programs included in the appropriation would benefit.

Alternatively, funding could be targeted to certain students within eligible programs. The logical bases of targeting would be professional promise or merit, to improve the quality of persons entering University programs, or financial need, to improve the affordability of access to the health professions.

## POLICY ALTERNATIVES

Eight policy alternatives are explored below. Four alternatives expect the University of Minnesota to manage health professions programs within existing revenues from public and private sources:

- o Continue to modify cost-related tuition within the University
- o Allow tuition to increase to 33 percent of the cost of instruction
- o Allocate or solicit more private University funds to attract qualified students
- o Allocate or solicit more private University funds to help financially needy students

Four alternatives would require the state to provide additional funding:

- o Provide additional program funding in the form of a tuition offset or other means
- o Provide scholarship funds to be used by the University to attract qualified students
- o Provide grant funds to help financially needy students
- o Modify the GRIP program to reduce the repayment burden on students with exceptionally high loans or low income

These alternatives are not mutually exclusive. Changes in tuition practices could be combined with new sources of program or student aid.

### Continue to Modify Cost-Related Tuition Within the University

Current state policy allows the University of Minnesota to establish tuition rates for individual programs. While the University has determined that tuition in each program should move toward 33 percent of the cost of

instruction, the Board of Regents could reverse this policy and continue to charge health professions students a smaller percentage of costs than other students.

This policy preserves the general tuition policy used since 1983 and avoids having the legislature make decisions about the appropriate amount of funding for individual programs. The Board of Regents remains in control of funding priorities among competing programs and objectives of the University.

A key implication of this policy, however, is that other University of Minnesota students, mainly undergraduates in the arts and sciences, subsidize extremely high cost programs that do not have counterparts in other systems. Under Commitment to Focus, the University has embarked on major changes to improve the quality of the arts and sciences, changes which will require substantial shifts in funding to these core programs. For this reason, and equity concerns, the University has indicated that it is no longer willing to protect the health science programs against the full effects of cost-related tuition.

In June 1987, a University task force recommended closing the College of Veterinary Medicine and the School of Dentistry and reducing the size of the department of family practice in the Medical School. These changes would have removed sources of the greatest conflicts between cost-related tuition and competitive tuition rates. While the Board of Regents has rejected proposals to close veterinary medicine and dentistry, there may be other ways to cut costs in health professions programs in order to reduce differences in instructional cost now covered by students in these and other programs. The Board of Regents could therefore continue the present practice but modify its effects through selective cost management.

**Allow Tuition to Increase to 33 Percent of the Cost of Instruction**

The University has said that without special funding tuition in health science programs will, over time, be set at 33 percent of the cost of instruction. This policy also preserves the state's tuition policy and is consistent with the University's autonomy and authority to establish internal funding priorities. It would allow funds to be redirected to other, presumably higher priority uses such as improvement in core arts and sciences programs that the University believes are essential to its overall reputation nationally. It would end "taxation" of other University students to pay for programs that benefit all residents of the state.

At higher tuition rates, the University, which is already relatively expensive among public institutions, would be less competitive based on cost. While students rarely choose a professional school solely on the basis of price, major increases in tuition are likely to discourage sought-after high ability students and students without significant family support. The GRIP program could provide some relief for students forced to increase their borrowing, but it will not help the University enroll students accepted by comparable universities that charge significantly less. Other universities, facing the same problems, however, also may increase tuition, reducing their ability to compete with the University on the basis of price.

The University's management decisions will affect the impact of cost-related tuition on health professions students. Any reductions in instructional cost that could be made would help programs maintain competitive tuition rates within a cost-related tuition policy. Since the University has stated its concern that tuition remain competitive, a rise in the percentage of cost passed on to health professions students probably would place increased pressure on these programs to reduce costs.

**Allocate or Solicit More Private University Funds to Attract Qualified Students**

The University could direct its own resources to fellowships for dental, pharmacy, veterinary medicine, or medical students. These funds could be awarded to incoming students on the basis of professional promise in order to compete with other universities with lower tuition charges. The additional fellowship funds could be used to reduce the effects of moving toward cost-related tuition rates. This plan would not require any changes in state funding or tuition policy.

If unrestricted resources were used for health professions fellowships, other programs and other students would be affected and, as indicated above, the University intends to shift resources toward, rather than away from non-health science programs. The allocation of private funds, however, is the responsibility of the Regents and reflects their priorities. Failure to use unrestricted funds to recruit health science students may indicate that this need, while worthy, is not as pressing as other funding requests within the University.

One way to avoid the use of unrestricted funds would be to conduct a separate funding drive for health science fellowships. Practicing professionals and health care industries are potential contributors to a fund to help maintain the quality of persons entering the health professions.

**Allocate or Solicit More Private University Funds to Help Financially Needy Students**

This option is similar to the previous one except that the University would award its funds on the basis of financial need. This policy would increase financial access but would not always help the University compete with other universities for top students. Since the University is most concerned about the effects of its tuition on the quality of entering classes,

it is not likely to use financial need, independent of merit, in awarding its own funds.

**Provide Additional Program Funding in the Form of a Tuition Offset or Other Means**

The University proposes that the legislature fund 75 percent, rather than 67 percent, of the cost of instruction in six health professions programs. This policy would change tuition policy by, for the first time, setting different funding levels for different instructional programs within a system.[74] It would require the legislature to decide that certain programs, because of their cost or importance to the state, merit enhanced support to maintain their funding without passing an unreasonable burden to other students. It would preserve, however, a key principle of the state's tuition policy. Both students and the state would explicitly share the costs of instruction, and potential cost increases would need to be weighed against the need to increase tuition.

A tuition offset would be intended as a permanent change in state funding policy for the University. Other ways to provide program funding would be:

- to provide separate funds for some research and public service functions that now are treated as part of the cost of instruction,
- to supplement support for essential programs that cannot attract sufficient numbers of qualified students to be viable under enrollment-based funding, or
- to establish target tuition rates and provide supplementary state funds to maintain them without cost shifting to other programs.

The latter two mechanisms, in particular, likely would require an explicit legislative decision that special funding was still needed and competitive with other state funding priorities. These approaches would, moreover, reduce the incentive to restrain instructional costs in order to avoid tuition increases.

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[74] The Minnesota Technical Institute System is funded at 74 percent of the cost of instruction.

To the extent that program funding reduced the need to shift costs on to undergraduates, there would be offsetting savings in state funds needed for the State Scholarship and Grant Program. The extra costs passed on to undergraduates have been estimated to be about $120 a year, and about 9,000 University of Minnesota students now receive state scholarship and grants. Under the scholarship and grant award model, each $120 increase in tuition results in an increase of $60 in a recipient's award. A reduction of $120 a year would therefore save the Scholarship and Grant Program $540,000.

All program funding would be used to limit changes in health science tuition while withdrawing the subsidy by students in other programs. The University would try to remain competitive with peer universities in tuition in order to attract the best students. The financial burden on needy students also would be reduced. The funding, however, would benefit all students equally and would not target help to the students most sought-after by the University or to the students who would otherwise be financially unable to afford health professions education.

**Provide Scholarship Funds to be Used by the University to Attract Qualified Students**

Under this option, the state would accept some responsibility for helping the University recruit promising health professions students. The goals of such a program would be to bolster the quality of people entering certain health professions and to support the quality of University programs.

Precedent for such a program has been established by legislative funding for graduate fellowships. Additional funding for health professions students could be added to the graduate fellowship appropriation to allow the University maximum flexibility in the strategic use of funds to develop the national reputation of priority programs. Neither graduate nor professional

students would be favored by the legislative appropriation. Alternatively, the legislature would need to determine the appropriate split between fellowships for graduate and professional students.

The University should be responsible for developing merit eligibility criteria that fit with current program priorities. The University also would need to be aware of competing offers to decide whether a few large awards or many smaller awards would be most effective in recruitment. Since the purpose of the appropriation would be to maintain the quality of University programs, both resident and non-resident students might be eligible.

**Provide Grant Funds to Help Financially Needy Students**

Under this option, the state would accept further responsibility for providing financial access to professional education. Except for a small appropriation for minority and disadvantaged students in the health sciences, Minnesota has not provided direct grant aid to support graduate or professional students for the purpose of maintaining access. This approach would raise questions about the need also to provide access to any graduate or professional program, including those in other institutions. A parallel can be found in undergraduate education in which federal and state need-based financial aid programs are designed to develop individual talent and opportunity, not to steer students to particular institutions or occupations.

Generally, states assume responsibility for financially assisting state residents only. Non-residents would be unlikely to be included, therefore, in a state program directed toward helping financially needy students. While such a program could help the University retain state residents and perhaps recruit state residents who would otherwise not enter the health professions, it would not help attract non-residents. Because the most professionally promising applicants are not always the most financially needy, this type of

program also would not directly help the University recruit students best able to contribute to the quality of its programs and the state's health care systems.

**Modify the GRIP Program to Reduce the Repayment Burden on Students with Exceptionally High Loans or Low Income**

A final option would be to incorporate some form of subsidy into the GRIP program for students graduating with loans that are out of proportion to their actual income. Some of these students could have exceptionally high loans; others might enter social service or other low paying practices. Now, a small number of students graduate with loans that cannot be repaid under the standard income schedule used in GRIP, but more would be expected under a fully implemented cost-related tuition practice. These students must accelerate their payments to more than 10 percent of the income schedule. While students with lower than average incomes can petition for lower payments, all GRIP loans must be repaid within 20 years. No state subsidies are involved; each student is individually responsible for all loans, and no student subsidizes another.

One way to offer relief to graduates with very high debts or very low incomes would be to forgive any outstanding GRIP balances after the student has paid 10 percent of income for 20 years. State funding would be needed.

A key problem with this approach could be that students who anticipate low incomes may borrow more than they need because they intend to qualify for forgiveness through the GRIP program. A subsidy could be restricted to graduates who enter the Peace Corps, serve disadvantaged populations, or make other socially valuable professional contributions. Additional reasons for lower than average incomes, however, include illness, personal leaves of absence, personality problems, and poor professional skills. Including these

reasons might encourage some students to enter the health professions by reducing the risks of borrowing but would add to state expense.

This option would be directed toward easing the financial burden of health professions education. Only very indirectly would it help the University recruit top students who can gain admittance to other institutions with more favorable tuition or financial aid.

**CONCLUSION**

One of several options, or a combination of options, could be adopted to help students in health professions programs finance their education. Several considerations can influence the selection of a preferred approach.

First, selection of an option depends on the interpretation given to the data and conclusions about conditions facing health professions students, the University of Minnesota, and the state.

Second, selection of a preferred option depends on how much importance is placed on the identified goals--meeting occupational needs, maintaining and improving the quality of University programs by attracting the top students, or ensuring access by responding to students' financial problems.

Third, selection of an option depends on where responsibility for action is placed--on University management of program costs or special assistance to students, or on state intervention. If special state funding is warranted, a decision would need to be made on whether to provide a subsidy for programs or targeted fellowships or grants for students.

Fourth, selection of an option may depend on whether is sets a precedent by deviating from institutional or state funding policies and what implications it has for future actions affecting either the University or other Minnesota institutions.

Policymakers and University officials will need to weigh the importance and implications of these considerations in selecting a preferred approach.

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